TOURIST WALKABILITY IN THE HISTORIC CORE OF HYDERABAD CITY

Project Phase-II Report

submitted to Visvesvaraya National Institute of Technology, Nagpur

in partial fulfilment of the requirements for the award of the degree

Master of Technology

In

Urban Planning

by

Janhvi Yelchalwar (MT23UPL019)

Under the guidance of

Dr. Meenal Surawar

Department of Architecture and Planning

Visvesvaraya National Institute of Technology Nagpur 440010 (India)

Year 2024-25

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Department of Architecture and Planning Visvesvaraya National Institute of Technology, Nagpur

Declaration

I, **Janhvi Yelchalwar**, hereby declare that this project titled **"Tourist walkability in the historic core of Hyderabad city"** is carried out by me in the **Department of Architecture and Planning** of Visvesvaraya National Institute of Technology, Nagpur. The work is original and has not been submitted earlier whole or in part for the award of any degree/diploma at this or any other Institution / University.

Janhvi Yelchalwar
Date:

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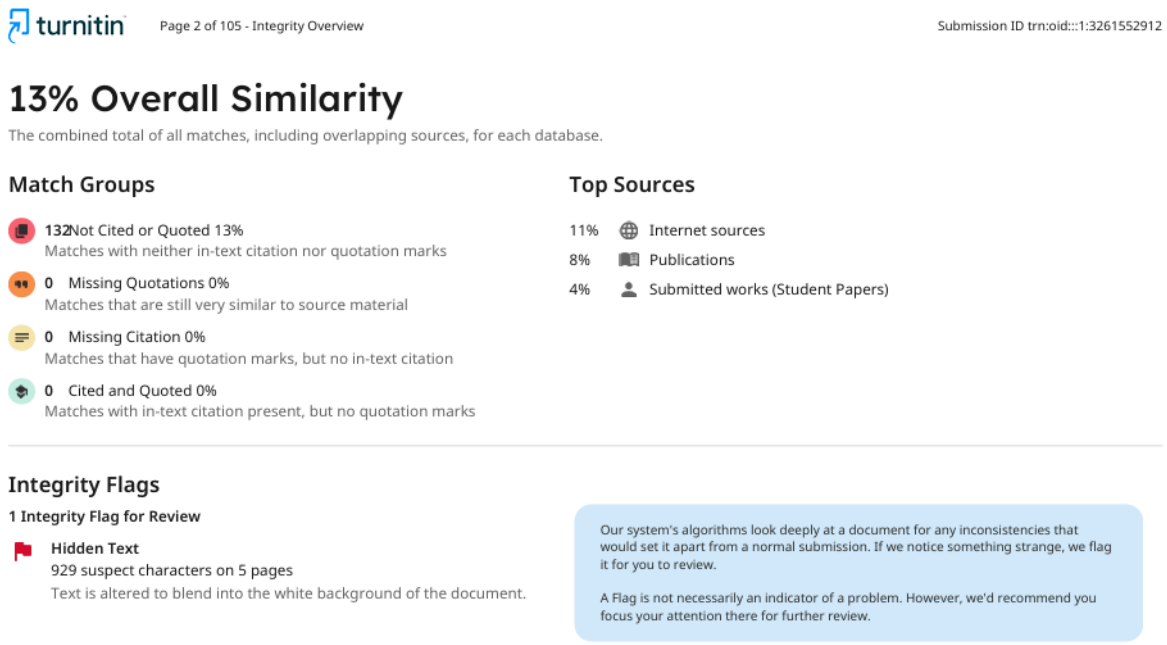

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On a concluding note; I am thankful to my parents and for their moral as well as moral support.

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ABSTRACT

Hyderabad, one of India's most culturally and historically rich cities, attracts a significant number of domestic and international tourists each year. The city's landmarks—such as Charminar, Golconda Fort, Laad Bazaar, and Hussain Sagar Lake—reflect its vibrant history, architecture, and urban character. Despite this, the overall pedestrian experience in Hyderabad remains inadequate, especially for tourists who primarily explore cities on foot. The existing pedestrian infrastructure is fragmented, often unsafe, and lacks essential features like continuous footpaths, proper signage, shaded walkways, and accessible design, especially for vulnerable groups such as elderly tourists, children, and persons with disabilities.

This study seeks to evaluate and enhance the **walkability** of key tourist zones in Hyderabad, aiming to improve accessibility, comfort, safety, and the overall tourist experience. The research adopts a mixed-methods approach, integrating spatial data analysis, policy reviews, literature studies, international case comparisons, and primary surveys including field observations and stakeholder interviews. Tools such as **GIS**, **Space Syntax**, **Walk Score**, and field-based **walkability audits** were employed to analyze pedestrian conditions, connectivity between tourist destinations, and infrastructural gaps. The study also considers theories like Jan Gehl's human-scale design, Kevin Lynch's imageability, and principles from New Urbanism to guide walkability enhancement strategies.

Case studies from Shiraz (Iran), Al-Falah (Riyadh), and Duke Street (USA) provide global perspectives on improving walkability in both historic and modern urban contexts. These examples helped identify key success factors such as integrated planning, spatial connectivity, shaded pathways, public transport linkages, and inclusive design.

Based on findings, the report proposes a strategic framework for walkability enhancement in Hyderabad, consisting of targeted interventions—such as pedestrian-first streetscapes, improved wayfinding systems, shaded and accessible walkways, and policy-level changes supporting walkable tourism. Design guidelines were formulated based on national policies like the Smart Cities Mission, AMRUT, Swadesh Darshan, and international walkability benchmarks.

In conclusion, the study emphasizes that enhancing tourist walkability is not merely about infrastructure upgrades but involves a multi-dimensional approach combining heritage conservation, urban planning, sustainable mobility, and inclusive public space design. By implementing the proposed framework, Hyderabad can significantly improve its tourism experience, promote sustainable and inclusive travel, and serve as a model for walkability improvements in other heritage cities across India.

Keywords - Tourist Walkability, Hyderabad, Pedestrian Infrastructure, Urban Mobility, Heritage Tourism, GIS, Space Syntax, Sustainable Tourism, Last-Mile Connectivity

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Chapter 1: Introduction

This chapter introduces the core subject of the research—walkability in urban tourism, with a specific focus on Hyderabad. As a city with a rich historical and cultural legacy, Hyderabad attracts millions of domestic and international tourists every year. Major attractions like Charminar, Golconda Fort, Laad Bazaar, and Hussain Sagar represent Hyderabad's deep-rooted heritage, architecture, and traditions. However, despite the city's tourism appeal, its pedestrian infrastructure falls short in supporting a safe, comfortable, and accessible walking experience for visitors.

Walking is a fundamental mode of urban mobility and plays a critical role in enhancing the tourist experience. Tourists often rely on walking to explore historical precincts, engage with the local culture, and visit attractions located in dense, vehicle-restricted areas. Yet in Hyderabad, walking conditions remain inadequate due to issues such as narrow or broken footpaths, poor signage, lack of shade, encroachments, unsafe road crossings, and poor integration with public transport. These gaps create a fragmented and often unsafe experience for tourists, particularly those with vulnerabilities—like the elderly, children, or persons with disabilities.

This study aims to assess the walkability of Hyderabad's tourist circuits, identify existing barriers, and propose strategic interventions that blend urban planning, heritage conservation, and inclusive design. It is informed by international best practices and planning theories and adopts spatial and behavioural tools to evaluate the existing conditions and develop walkability solutions that are tourist-focused, context-sensitive, and replicable.

1.1 Introduction to the topic

Tourism is an important part of Hyderabad's economy and culture. The city is known for its rich heritage, historical monuments, vibrant markets, and diverse food culture, all of which attract tourists from across the world. To truly enjoy these attractions, walking is one of the best ways for tourists to explore the city. Walking also supports sustainable tourism by reducing pollution and traffic. However, many parts of Hyderabad still lack proper walking paths, clear signs, safe crossings, and shaded areas. This can make it difficult for tourists, especially in crowded or historic areas like Charminar, Laad Bazaar, or Golconda Fort. Improving walkability can help tourists have a better experience and spend more time in the city. (Knapskog, 2019)

There is a big difference between walking with a tour guide and walking on your own using a mobile app. Guided tours follow a set path, but self-guided tours give tourists more freedom to explore. Cities that are easy and safe to walk in attract more tourists and help them feel more connected to the place. Walkable areas often become popular spots where many tourists gather. This helps cities make better use of their public spaces. However, there is not much research on how to plan the best walking routes for tourists, especially in historic cities. This study focuses on creating better walking routes in Hyderabad for tourists. It aims to understand the current walking conditions, identify challenges, and suggest ways to make popular tourist areas more accessible, enjoyable, and safer for walking.

1.2 Walkability

1.2.1 DEFINATION

Walking is one of the most basic and common forms of human locomotion, often used for both transportation and exercise. Walking is the most natural and human powered movement from one place to another. Walkability can be defined as the extent to which an area is suitable for pedestrian movement. Various elements influence walkability, such as the availability and quality of footpaths, sidewalks, and other designated pathways for pedestrians, the condition of these pathways, traffic and road situations, land use patterns, accessibility of buildings, and safety considerations. (Hussain, 2023)

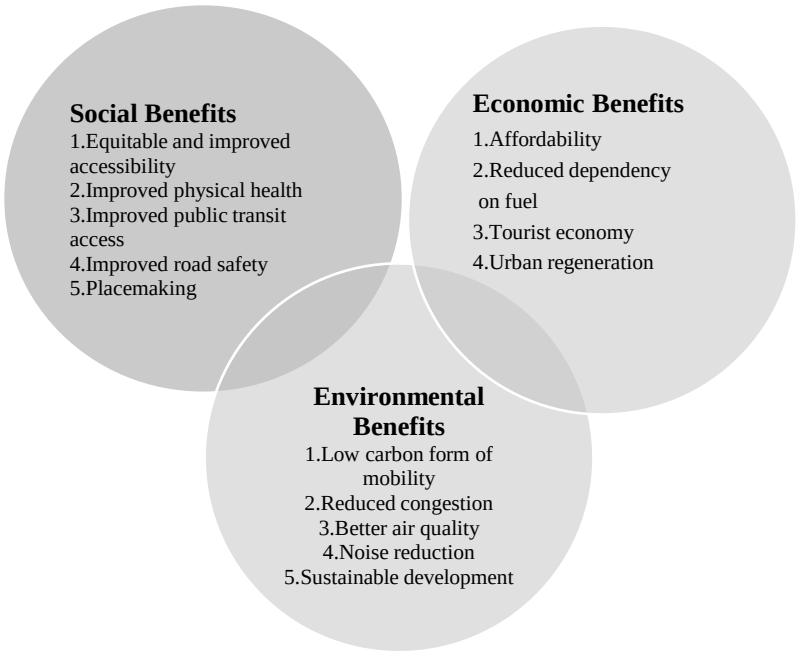


Figure 01 – Walkability Benefits (Source – Walkability in Indian cities)

Walkability contributes to the overall transportation system by reducing dependence on cars, improving mobility, and fostering a more sustainable, healthy, and vibrant urban environment. There are many Benefits of walkability in urban transportation social, environmental & economical. The mode of the walkability of the Indian streets, as compared to most of the other streets, particularly for older people in other parts of the world, have a complex mix of different layers like outdoor spaces and buildings, transportation, social participation, community support and health services, walkability assessment, etc. Moreover, walkable environments support social equity by providing mobility options for people who cannot drive, such as children, the elderly, and low-income individuals. Tools like Walk Score, the Global Walkability Index (WHO, 2011), and GIS-based network analysis are commonly used to evaluate and improve walkability in urban and tourist settings. (Choi E. , 2012)

1.2.2 WALKABILITY CONCEPTS

The Perfect Neighbourhood?

"The basic concept of the **Twenty-Minute Neighbourhood** is that anyone living in one of these neighbourhoods should be able to bike or walk to their non-work errands in just twenty minutes."

The purpose of this planning strategy is to locate a mix of uses within neighbourhoods, so that people have access to all of their daily amenities within a twenty-minute walking distance of their home or work.

A **20-minute neighbourhood** (also known as a **20-minute city**) is an urban planning concept where all essential services and amenities are within a 20-minute walk or bike ride from people's homes. This approach focuses on reducing car dependency by ensuring that daily needs, such as work, education, shopping, recreation, and healthcare, are easily accessible within a short distance.

20-minute neighbourhood
The ability to meet most of your everyday needs locally within a 20-minute journey from home by walking, cycling, riding or local public transport
Local shopping centres
Local health facilities and services
Local schools
Lifelong learning opportunities
Local playgrounds and parks
Green streets and spaces
Community gardens
Sport and recreation facilities
Safe streets and spaces
Affordable housing options
Ability to age in place
Housing diversity
Walkability
Safe cycling networks
Local public transport
Well connected to public transport, jobs and services within the region
Local employment opportunities

Figure 02 – 20 Minutes city (Source – 20 Minutes city)

Mixed Land Use - The area combines residential, commercial, and recreational spaces so that people can access essential services without having to travel long distances. Green Spaces and Local Amenities- The neighbourhood should include green spaces, parks, community centres, and cultural venues to ensure residents can enjoy recreational activities within their local area. Public Transport Integration- Although the 20-minute neighbourhood emphasizes reducing car reliance, it also supports easy access to public transportation. Public transit hubs should be within walking distance to connect residents to areas outside their immediate neighbourhood. Pedestrian and Bicycle-Friendly Infrastructure - The design focuses on creating safe and comfortable spaces for walking and cycling. This includes wide, well-maintained sidewalks, bike lanes, and traffic calming measures.

1.2.3 Walkability factors

Walkability factors are affecting walking. These factors influence the ease, safety, and overall experience of pedestrians in urban environments. Effective walkability promotes not only physical health but also social interaction, economic growth, and environmental sustainability.

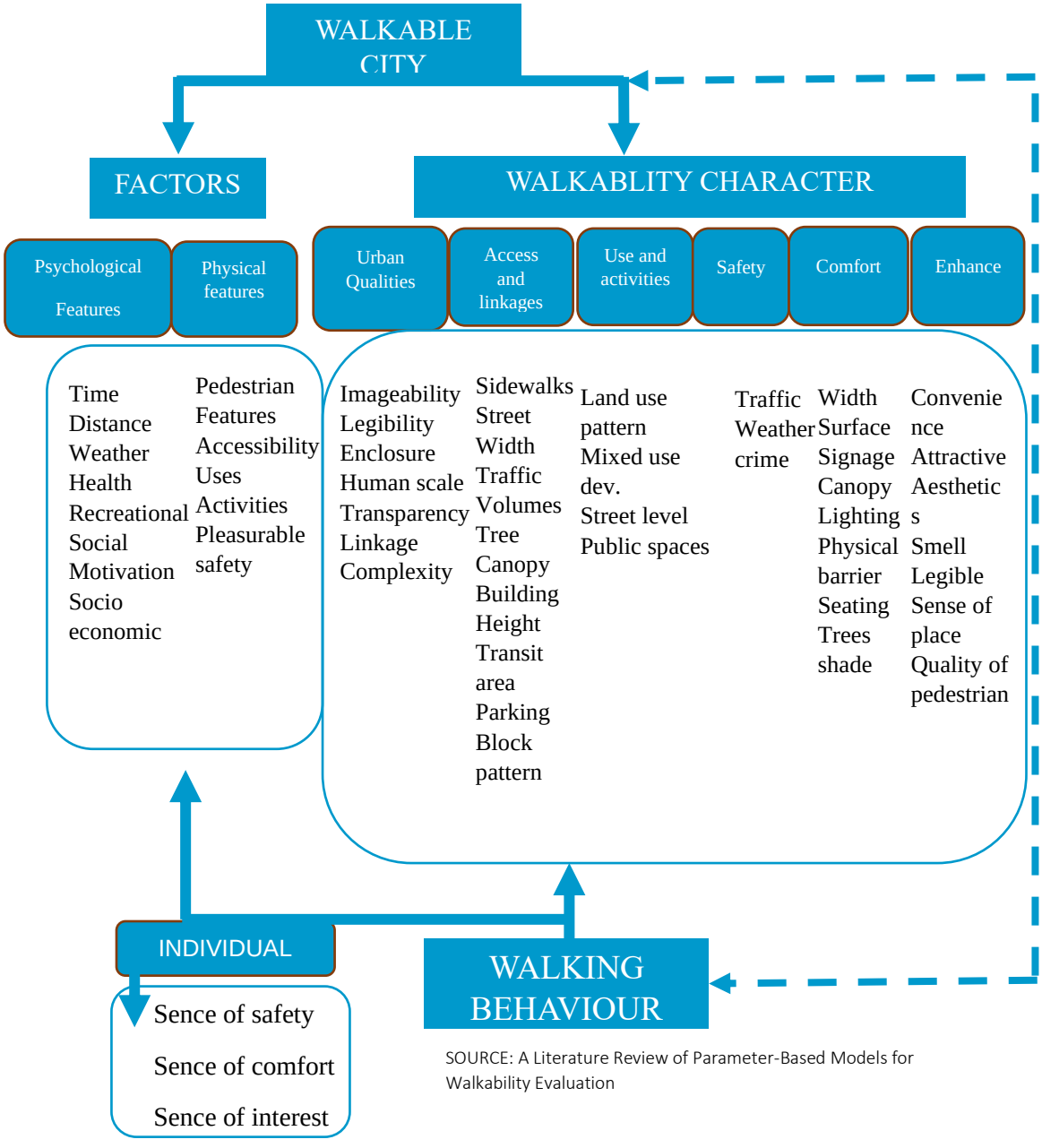


Figure 03 – Walkability Factors

: (SOURCE: A Literature Review of Parameter-Based Models for Walkability Evaluation)

1.3 Importance of Walkability in Tourism

Walking is one of the most basic and common forms of human locomotion, often used for both transportation and exercise. Walking is the most natural and human powered movement from one place to another. Walkability can be defined as the extent to which an area is suitable for pedestrian movement. Various elements influence walkability, such as the availability and quality of footpaths, sidewalks, and other designated pathways for pedestrians, the condition of these pathways, traffic and road situations, land use patterns, accessibility of buildings, and safety considerations. (Giliberto, 2023)

Tourism plays a crucial role in boosting the economy of cities around the world. For tourists, exploring a city often involves walking, making walkability an essential part of their experience. Walkability refers to how easy, safe, and enjoyable it is to walk around an area. In tourist destinations, well-designed walkable spaces can make a significant difference by encouraging visitors to explore more, stay longer, and engage deeply with the local culture.

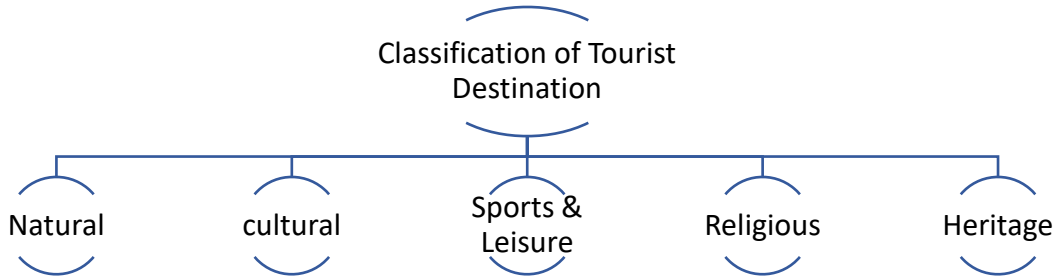
Urban areas, especially city centres, are popular spots for both local and international tourists because of their rich mix of attractions, such as historical landmarks, shopping streets, cultural sites, and public spaces., Many cities do not fully cater to the needs of walking tourists, often prioritizing vehicles over pedestrians. Creating walkable spaces for tourists can improve their overall experience by enhancing accessibility, safety, and comfort. Additionally, walkability contributes to sustainable tourism by reducing the reliance on vehicles, supporting local businesses, and creating vibrant public spaces. This study focuses on the importance of walkability in tourism, highlighting its impact on visitors' experiences and the overall appeal of tourist destinations.

Walkability and Tourism Walkability should be a magnet for tourists to experience places. The cities that accommodate most tourists are large multifunctional entities into which tourists can be effortlessly absorbed and experience, largely on foot the spaces within the cities Destination walkability is an important part of the tourist and leisure experience and a significant element of destination planning. pedestrian oriented tourism paths play a key role in providing an integrated structure of historical landmarks for visitors, enhancing their loyalty (e.g., willingness to revisit a destination and recommend it to others). This, in turn, con tributes to the success of tourism destinations. (Sari P. A., 2024)

1.3.1 Tourist walkability

Tourist walkability is a measure of how friendly and welcoming a neighborhood is towards a pedestrian. A walk-able Streets caters to the needs of Tourist by having essential land use within a walk-able distance, between 400 to 800 meters. Providing diverse land use mix, housing density, safety, accessibility, urban streetscape, environmental quality, thermal comfort and infrastructure makes a neighborhood walk-able Tourist walkability is a measure of how friendly and welcoming a neighbourhood is towards a pedestrian. A walk-able street caters to the needs of tourists by having essential land use within a walk-able distance, between 800 -1200 meters.

Tourist Classification



Challenges in Developing Walkable Tourist Areas:

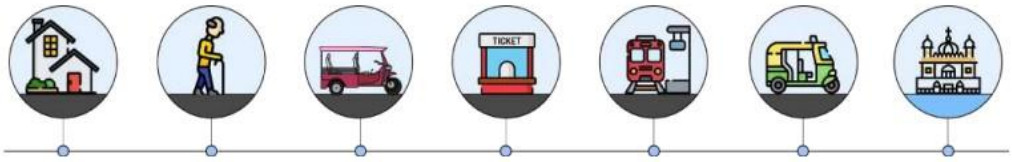
1. Balancing pedestrian needs with traffic flow.
2. Preserving heritage while modernizing infrastructure.
3. Addressing overcrowding in popular tourist zones.

1.3.2 Tourism Stakeholders

To envision the goal of tourism for all, it is appropriate to create Participatory mechanism towards development of accessible tourism practices including schemes for engaging with tourist behaviour towards accessibility as well.

1. Tourists, both domestic and international / foreign, with diverse needs which includes persons with disabilities, elderly, families, women, children, solo travelers, mixed groups of travelers etc.
2. **Architects / Designers / Planners involved in tourism projects**
3. Tour and Travel Operators
4. Formal and Informal Businesses
5. State Governments
6. Policy Makers
7. Tourism Service Providers 8. Tourism Institutes

1.3.3 Walkability and Tourism



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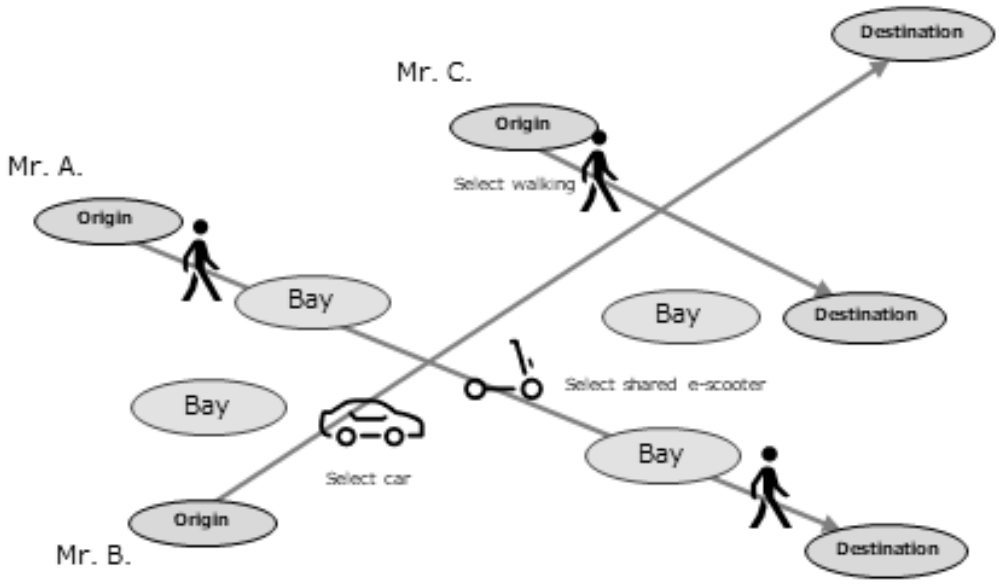


Figure 04 – Walkability and Tourism (Source – Walkability is urban design problem)

Origin to destination nearest route for walking

A **tourist realm** refers to the overall environment or infrastructure that supports tourism within a city or region. It encompasses various elements such as accommodations, attractions, transportation systems, and services that make a place attractive and accessible to visitors. The tourist realm plays a critical role in shaping the tourist experience, from ease of travel to engagement with local culture and landmarks.

Attractions and Landmarks: Major tourist spots such as historical sites, natural wonders, museums, and entertainment venues make up the heart of the tourist realm. The diversity and accessibility of these attractions can determine the appeal of a destination. For example, **Paris** is known for landmarks like the Eiffel Tower and the Louvre, while **Kyoto** offers a rich cultural experience through its temples and gardens

Transportation Infrastructure: Efficient transportation systems, including airports, public transit, and car rentals, are vital for connecting tourists to key attractions. In **London**, for instance, the **Oyster card** system allows tourists to travel easily across public transport, enhancing the accessibility of popular sites

Cultural and Local Experiences: Immersive cultural experiences, such as food tours, local markets, and cultural performances, contribute to a memorable tourist experience. Cities like **Bangkok** are known for their street food culture, which is a big draw for tourists

Tourism Services and Support: Visitor centres, guided tours, digital tools like apps, and multilingual signage are important for assisting tourists in navigating the destination. In **Rome**, tourists benefit from detailed maps and mobile apps that guide them to major sites like the Colosseum and Vatican City

Challenges in the Tourist Realm: Overtourism: Some popular destinations face challenges related to overcrowding, which can diminish the quality of the tourist experience and strain local infrastructure.

Sustainability: Many destinations are increasingly focusing on sustainable tourism practices to balance tourism growth with environmental and cultural preservation. (Dragović, 2023)

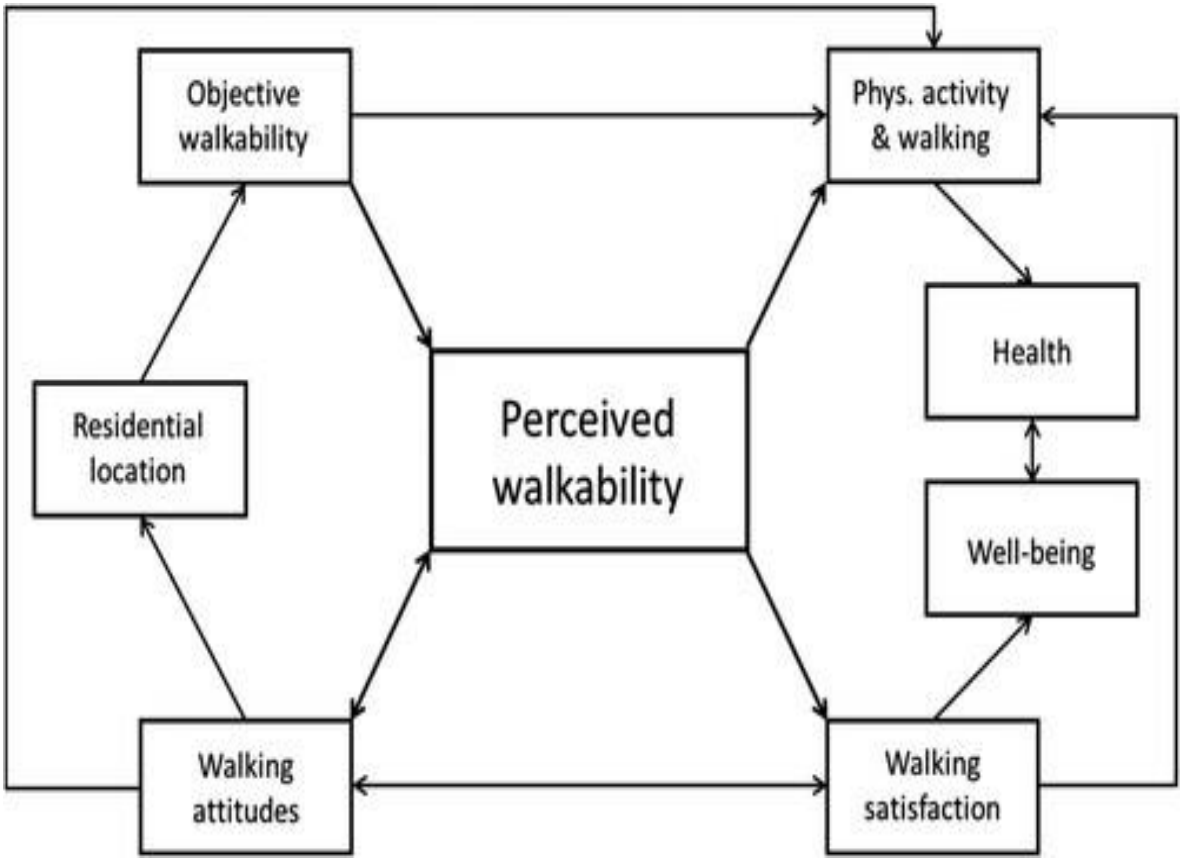


Figure 05 – Elements of the Tourist Realm (Source – Walkability is urban design problem)

1.4 Problem Identification

Hyderabad, despite being a city of immense historical and cultural significance, faces substantial challenges in providing a walkable environment for tourists. The city's iconic attractions such as Charminar, Golconda Fort, Laad Bazaar, and Necklace Road are often difficult to access on foot due to fragmented pedestrian infrastructure, encroachments, and the dominance of vehicular traffic. Tourists frequently encounter narrow or broken footpaths, a lack of shaded areas, poor street lighting, insufficient signage, and unsafe pedestrian crossings. These conditions reduce the comfort, safety, and convenience of exploring the city on foot, which is particularly problematic for vulnerable groups like elderly tourists, children, or persons with disabilities. Moreover, the disconnect between tourist destinations and public transit nodes — known as the "last-mile gap" — further discourages walking. In many cases, walking routes are not continuous, lack wayfinding

elements, or are interrupted by traffic-heavy roads, forcing tourists to rely on motorized transport even for short distances. The absence of pedestrian-centric planning in tourism development policies, coupled with poor infrastructure maintenance and limited use of smart technologies, has resulted in an urban environment that does not support or encourage pedestrian tourism. These issues not only diminish the tourist experience but also hinder the city's potential to promote sustainable and inclusive tourism. Thus, identifying and addressing these challenges is critical for making Hyderabad a more accessible, walkable, and tourist-friendly city.

Hyderabad, a city celebrated for its historic monuments, vibrant bazaars, and rich cultural heritage, faces significant challenges in offering a walkable experience to its tourists. Despite being home to major attractions like Charminar, Golconda Fort, Hussain Sagar Lake, and Laad Bazaar, the city lacks a well-connected, comfortable, and safe pedestrian network tailored to tourists' needs. Key issues include discontinuous or poorly maintained footpaths, lack of shaded walkways in areas with intense heat, insufficient signage and wayfinding tools, and weak integration with public transit systems. Tourists often face difficulty navigating between attractions due to vehicle-dominated roads, unsafe crossings, and encroachment by street vendors. Additionally, the absence of inclusive infrastructure limits accessibility for elderly travellers, families with children, and persons with disabilities. The current urban planning framework prioritizes vehicular movement over pedestrian experience, and tourism development initiatives rarely consider pedestrian comfort and convenience as a central component. These challenges result in fragmented tourist circuits, reduced walkability scores, and missed opportunities for immersive cultural exploration. Improving tourist walkability in Hyderabad is thus not only a matter of infrastructure but also of urban equity, sustainability, and enhancing the overall visitor experience

1.5 Need of the Study

The study on enhancing tourist walkability in Hyderabad is essential due to the city's unique blend of historical significance, cultural richness, and growing tourism potential. As a major urban center with landmarks such as Charminar, Golconda Fort, Laad Bazaar, and Hussain Sagar, Hyderabad attracts a diverse range of tourists — from history enthusiasts and pilgrims to international travelers. However, the current pedestrian infrastructure in these areas remains inadequate, with issues such as poor connectivity between tourist spots, lack of accessible and shaded walkways, insufficient signage, and weak integration with public transit. These deficiencies not only limit the mobility and experience of tourists but also pose safety and comfort challenges, particularly in the face of Hyderabad's hot climate and congested traffic. Walkability plays a vital role in sustainable urban tourism by encouraging slow-paced, immersive exploration, reducing carbon emissions, supporting local businesses, and fostering meaningful cultural interactions. A well-designed walkable environment enhances tourist satisfaction, promotes longer stays, and strengthens the city's image as a tourist-friendly destination. Given the global shift towards pedestrian-friendly urban planning and the Indian government's emphasis on inclusive tourism through schemes like Swadesh Darshan and Smart Cities Mission, it becomes imperative to re-evaluate and improve the pedestrian experience in Hyderabad. This study is thus necessary to identify existing gaps, propose context-sensitive solutions, and provide a replicable framework for enhancing walkability in other historic Indian cities.

1.6 Aim, objective, Scope, Limitation

AIM –

To enhance the walking Experience for tourists in Hyderabad and preserving the city's cultural and historical essence.

OBJECTIVE –

1. Assess the current walkability conditions in key tourist destinations of Hyderabad, such as Charminar, Golconda Fort, and Necklace Road, Hussain Sagar.
2. Identifying potential areas to a comfortable, safe, and accessible walking experience for tourists.
3. Analyze the impact of pedestrian infrastructure on tourist satisfaction and accessibility.
4. Engage with stakeholders, including tourists, locals, and authorities, to understand needs and challenges..

SCOPE –

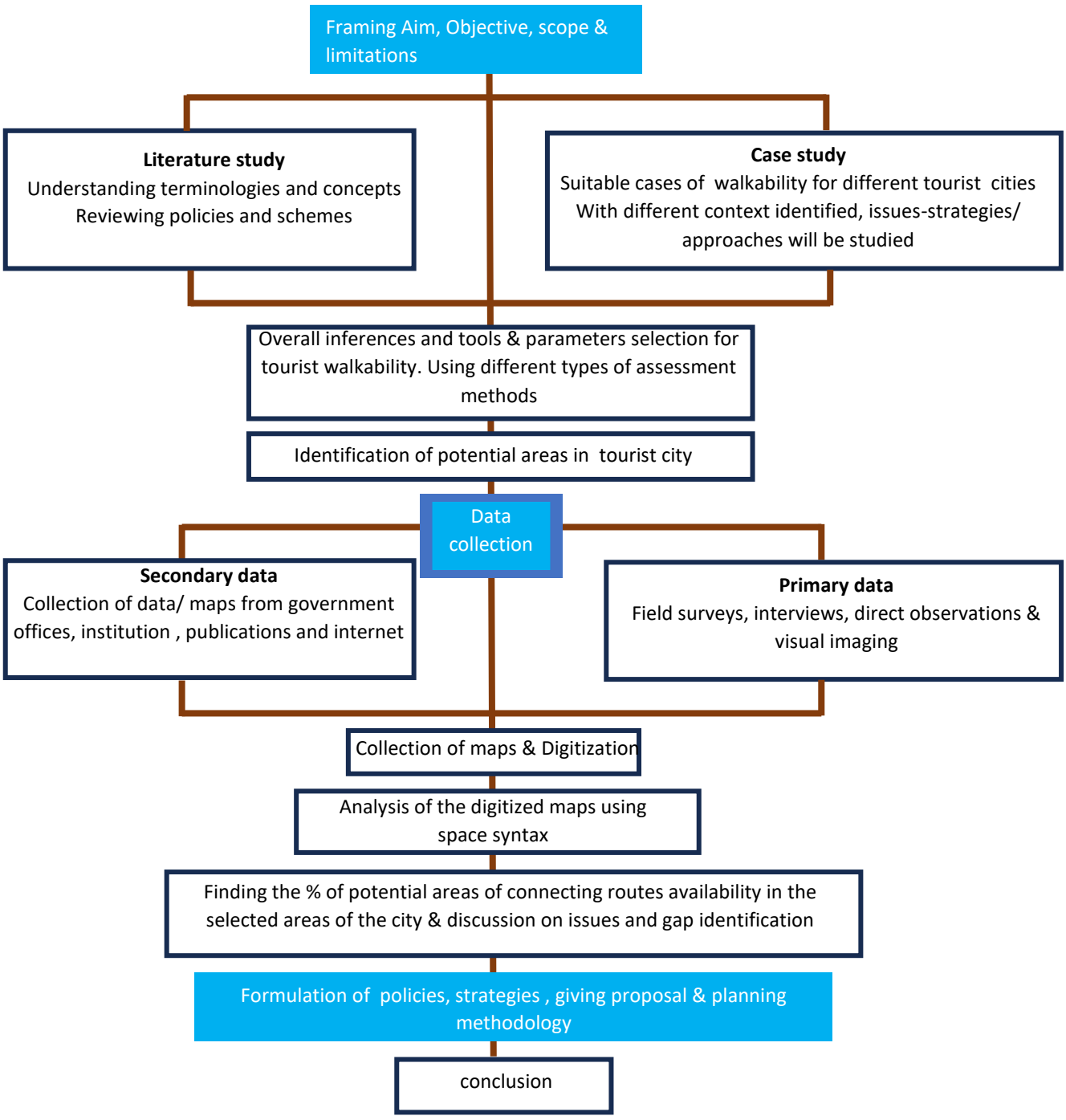
1. Focused on specific tourist destinations (e.g., historic city centers, cultural heritage sites, or nature-based attractions).
2. Includes factors such as pedestrian infrastructure, safety, accessibility, connectivity, wayfinding, and environmental comfort.
3. Combines urban design, heritage conservation, tourism management, and transportation planning.
4. Involves urban planning, transportation, sustainability, and tourism studies.

LIMITATIONS –

1. The findings and recommendations are specific to Hyderabad and may not be directly applicable to other cities.
2. The study will primarily focus on urban areas where walkability is more relevant for tourists.
3. The study limited on municipal corporation boundaries of the city.
4. The research will give tourism solution to small patch of the entire district.
5. Limitations of this study This study is limited by the availability and quality of secondary data sources for city.

1.7 Methodology-

The study adopts a structured methodology combining both qualitative and quantitative approaches to assess and enhance tourist walkability in Hyderabad. It begins with problem identification and the formulation of aim, objectives, scope, and limitations. A detailed literature review and policy analysis help establish the theoretical and regulatory framework. Case studies of international and Indian cities provide best practices. Primary data is collected through field surveys, observations, and interviews, while secondary data includes maps, demographic profiles, and transport networks. Analytical tools such as GIS, Space Syntax, and Walk Score are used to evaluate connectivity, accessibility, and pedestrian comfort. Based on the findings, existing gaps are identified, and targeted design, planning, and policy interventions are proposed to improve walkability in key tourist zones.


Framing Aim, Objective, scope & limitations
Literature study
Understanding terminologies and concepts
Reviewing policies and schemes
Case study
Suitable cases of walkability for different tourist cities
With different context identified, issues-strategies/ approaches will be studied
Overall inferences and tools & parameters selection for tourist walkability. Using different types of assessment methods
Identification of potential areas in tourist city
Data collection
Secondary data
Collection of data/ maps from government offices, institution , publications and internet
Primary data
Field surveys, interviews, direct observations & visual imaging
Collection of maps & Digitization
Analysis of the digitized maps using space syntax
Finding the % of potential areas of connecting routes availability in the selected areas of the city & discussion on issues and gap identification
Formulation of policies, strategies , giving proposal & planning methodology
conclusion

1.8 Structure Of the Report –

The report is systematically structured into multiple chapters, each addressing a specific component of the research aimed at improving walkability for tourists in Hyderabad. Chapter 1, the Introduction, sets the stage by presenting the core idea of walkability within the context of urban tourism, emphasizing its relevance in Hyderabad due to the city's rich heritage and tourism potential. This chapter outlines the existing challenges faced by pedestrians, especially tourists, and defines the scope, objectives, methodology, and limitations of the study. Chapter 2, Literature Studies, provides the theoretical foundation by reviewing global and Indian literature on walkability, including key concepts, theories, and parameters. It explores planning theories such as Jan Gehl's human-scale design, Kevin Lynch's urban legibility, and the principles of New Urbanism. It also presents international case studies from cities like Shiraz, Riyadh, and Alexandria to highlight diverse walkability interventions, followed by a comparative analysis to extract lessons applicable to Hyderabad. The chapter concludes with a conceptual framework and design guidelines tailored for tourist-centric urban planning, along with a critical review of existing policies and technological tools used to measure and enhance walkability.

Chapter 3, Study Area Profile, delves into the spatial, demographic, and tourism context of Hyderabad. It examines the city's urban structure, planning jurisdiction, economic significance, heritage value, and the challenges associated with pedestrian infrastructure. The chapter highlights how planning agencies like HMDA and GHMC are involved in city development and identifies key gaps in tourist mobility and walkability. Chapter 4, Existing Walkability Assessment, marks a transition to field-level evaluation. It introduces walkability audit parameters—such as accessibility, connectivity, safety, comfort, and continuity—and uses spatial analysis tools including GIS, Space Syntax, and observational surveys to assess conditions in major tourist zones like Charminar, Golconda Fort, and Necklace Road. This chapter uses both quantitative and qualitative methods, including field surveys, stakeholder interviews, footfall counts, and visual mapping, to analyze pedestrian experience and identify infrastructural gaps.

Subsequent chapters (not included in the snippet) are expected to build on these assessments by proposing actionable strategies, policy recommendations, and design interventions for improving tourist walkability. Collectively, the report follows a logical progression from conceptual understanding to data-driven analysis and solution-oriented planning, integrating urban planning, transportation, and heritage conservation to formulate a replicable model for enhancing tourist walkability in historic Indian cities like Hyderabad

Chapter 2: Literature Studies –

2.1 Introduction

Chapter 2 lays the theoretical foundation for the study by reviewing existing literature on walkability, particularly in the context of urban tourism. As the concept of walkability is multi-dimensional—spanning urban design, transport planning, public health, and tourism—this chapter synthesizes a wide range of academic and practical sources to understand how walkability has been defined, measured, and implemented globally and in India. It explores foundational theories such as Jan Gehl's human-scale design, which emphasizes pedestrian-oriented public spaces; Kevin Lynch's theory of urban legibility, which highlights the importance of paths, nodes, and landmarks for orientation; and the principles of New Urbanism that advocate for compact, connected, and walkable neighbourhoods. The chapter also examines various walkability assessment tools such as Walk Score, PEDS, Space Syntax, and GIS-based mapping techniques that aid in evaluating pedestrian infrastructure. Special attention is given to the role of walkability in enhancing tourist experiences—highlighting how well-connected, shaded, accessible, and legible urban environments contribute to greater tourist satisfaction and longer stays. Furthermore, the literature review identifies gaps in the current body of research, notably the limited focus on walkability from a tourist's perspective in Indian cities. These insights justify the need for a comprehensive, tourist-centric walkability framework tailored to the unique spatial and cultural conditions of cities like Hyderabad. This chapter thus serves as the intellectual groundwork for the case studies, methodology, and analysis in the subsequent chapters.

2.2 Literature Review

SR. NO	RESEARCH PAPER TITLE	DATA	TOOLS	PARAMETERS	INFERENCES
1.	Tourist expectation and satisfaction towards pedestrian walkway in Georgetown, a World Heritage Site	population density map Local street map traveling information survey	mean values mean score	Accessibility Connectivity Continuity Safety Amenities	he findings of this study can be very beneficial for urban city planners in providing a pleasant pedestrian environment towards easing the tourists in experiencing the city on foot.
2.	Space syntax analysis as tool to develop sustainable tourism: the case of Garli, a hamlet in Kangra district, Himachal Pradesh, India.	Google Images, base maps Actual observation	Q-GIS Space syntax	Connectivity spatial permeability road network way finding	Space Syntax analysis can be adapted as a significant tool to identify people oriented spaces and can be used for a variety of purposes including sustainable development.
3.	Social Logic of Cities and Urban Tourism Accessibility; Space Syntax Analysis of Kuala Lumpur City Centre	Google Images base maps Lat sat images	Q-GIS Space syntax	Connectivity Accessibility	This paper used the space syntax method to analyses the KLCC area. It is proposed to resolve some of the identified problems by using the suggested square model.
4.	Analysis of Walkable Street Networks by Using the Space Syntax and GIS Techniques: A Case Study of Cankiri City	OpenStreetMap Google Images Lat sat images	GIS Space syntax	Integration Choice	This method will also benefit urban studies in understanding the relationship between urban form and walkability.
5.	Enhancing spatial accessibility of tourist spots in Al Kharj city through space syntax analysis	OpenStreetMap Google Images Lat sat images	Depth map X space syntax	Connectivity Accessibility	The results highlight how crucial it is to carefully consider spatial integration, choice, and connectivity when to improve accessibility and utilization.
6.	Assessment of factors influencing walkability in shopping streets of tourism cities: case of Bursa, Turkey	Google Images base maps Landuse map	GIS Space syntax	connectivity accessibility crime security traffic safety comfort	This study can be seen as an initial effort to clarify the factors influencing the walkability in shopping streets through a case study in Bursa, Turkey. It represents a case where tourism potential is expected to increase in near future.

Table 01 - Literature Review Summary (Source – Author)

SR. NO	RESEARCH PAPER TITLE	DATA	TOOLS	PARAMETERS	INFERENCES
1.	Tourist expectation and satisfaction towards pedestrian walkway in Georgetown, a World Heritage Site	population density map Local street map traveling information survey	mean values mean score	Accessibility Connectivity Continuity Safety Amenities	he findings of this study can be very beneficial for urban city planners in providing a pleasant pedestrian environment towards easing the tourists in experiencing the city on foot.
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Table 01 - Literature Review Summary (Source – Author

2.3 Walkability Theories

2.3.1 Jan Gehl's Theory of Human-Scale Design

1. **Eyes on the Street**: Active streets with natural surveillance enhance safety.
2. **Short Blocks**: Frequent intersections improve connectivity and pedestrian flow.
3. **Mixed-Use Development**: Combining residential, commercial, and recreational uses fosters walkability.
4. **Density**: Higher population density supports active streets and local businesses.
5. **Diversity**: Varied building ages and uses create dynamic, walkable neighborhoods.
6. **Human Scale**: Streets designed for pedestrian comfort, not cars.

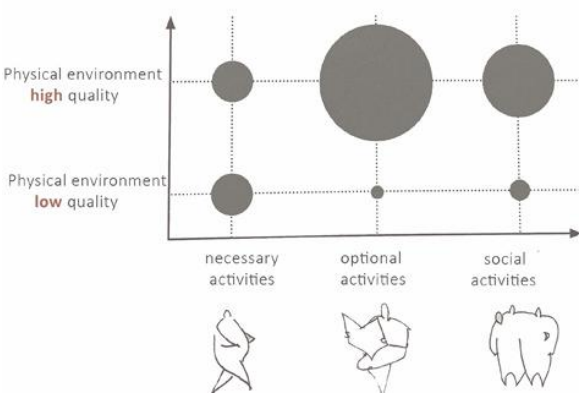


Figure 06 – Jan Gehl's Theory of Human-Scale Design (Source – Urban planning theories)

2.3.2 Kevin Lynch's Theory

5 important elements (of legibility) in mental maps of cities:

1. **Path** — distinctive thread that gives direction.
2. **Edge** — the boundary between two areas.
3. **Node** — important pathways come together, activity.
4. **District** — medium/large area with a common identity.
5. **Landmark** — reference point that stands out due to shape, height, color, or historic importance

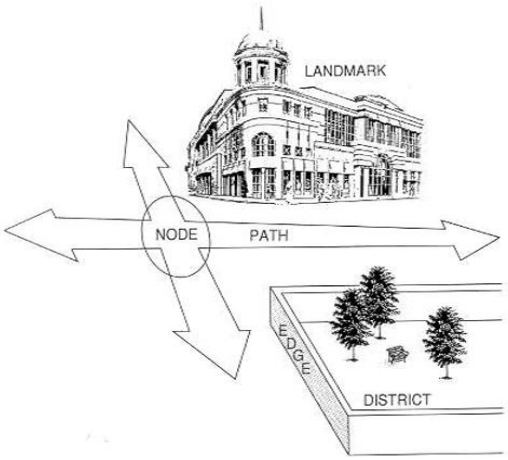


Figure 07 – Kevin Lynch's Theory of Urban Legibility (Source – Urban planning theories)

2.3.3 New Urbanism

The New Urbanism is a planning and development movement create walkable, compact, and connected communities.

Walkability , Connectivity, Pedestrian friendly design, Creating public spaces , safely diversity mix used development

1. Walkable neighborhoods oriented to the quarter-mile, **five-minute walk**.
2. Primary orientation to public transit systems, rather than private automobiles.
3. Greater integration of different land uses (such as housing, shops, workplaces and schools) at the neighborhood level.

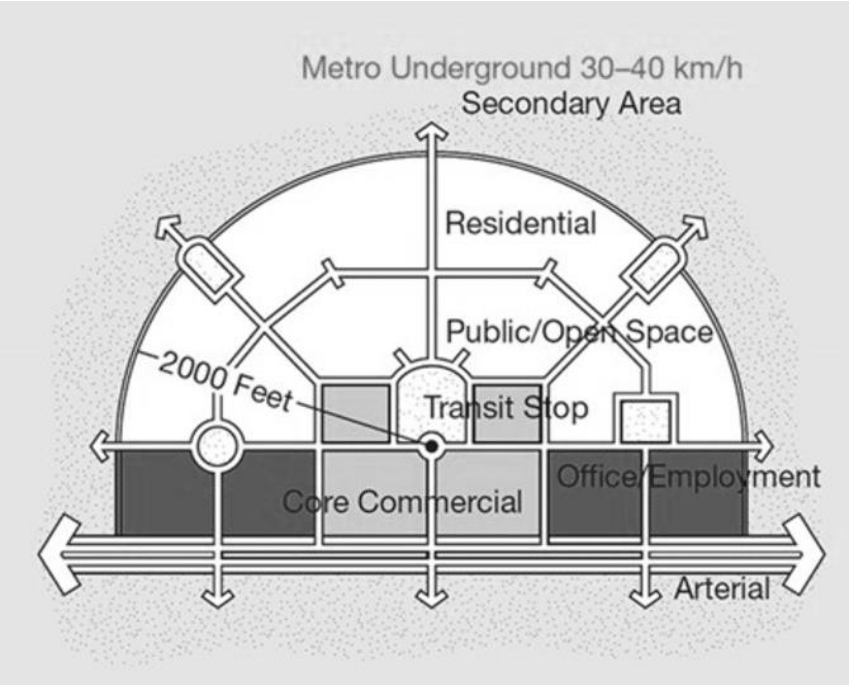


Figure 08 – New Urbanism Concept (Source – Urban planning theories)

New Urbanism is a planning and design theory that advocates for the creation of walkable, mixed-use, and sustainable communities that prioritize the human scale over automobile dependence. Emerging in the early 1980s, New Urbanism challenges the sprawl, isolation, and car-centric development typical of modern suburban neighbourhoods. It seeks to build urban environments that foster social interaction, environmental sustainability, and a sense of community

The principles of New Urbanism are aimed at creating sustainable, human-centered communities that reduce dependence on cars, foster social interaction, and promote environmental stewardship. By focusing on **mixed-use development, walkability, Connectivity, sustainable practices, and community integration, Environmental Integration and Conservation , Mixed-Use Town Centres, Strong Sense of Place, Focus on Public Space and Community Engagement** New Urbanism seeks to reshape cities and neighbourhoods into more liveable, accessible, and inclusive spaces.

2.4 International Case Studies of Tourist-Friendly Walkable Areas

The study was done in the historic district of Shiraz, Iran – a place full of old and valuable tourist landmarks like bazaars, mosques, and alleyways. Even though Shiraz attracts many tourists, the central area of the city isn't very friendly for people who want to walk around and explore. (Ghazal Hassanshahi, 2023)

2.4.1 CASE STUDY -1 , SHIRAZ , IRAN

Detailed Case Study: Shiraz, Iran – Enhancing Walkability in a Historic Tourist District

Category	Details
Location	Historic Core of Shiraz, Iran – including major tourist spots like Vakil Bazaar, historic mosques, old alleyways, and cultural landmarks
Study Area Size	Approximately 350 hectares
Tourism Context	One of Iran's major tourist cities; includes two UNESCO World Heritage sites nearby (Persepolis & Pasargadae); receives high footfall during festivals (e.g., Nowruz)
Problems Identified	- Streets primarily designed for cars, not pedestrians - Unsafe and uncomfortable for walking, especially at night - Lack of lighting, poor connectivity, and absence of public transport access in core areas
Objective of Study	To identify and design optimal tourist walking routes using multi-criteria evaluation and spatial analysis
Methodology	- Consulted 30 experts (urban planners, architects, tourism professionals) - Selected key criteria for walkability - Used GIS for mapping - Employed AHP (Analytic Hierarchy Process) to weight factors - Applied TOPSIS to rank route alternatives - Used Space Syntax to assess connectivity and integration
Tools Used	- ArcGIS - Google Earth Pro - Walk Score - Space Syntax (Depth Map X software) - AHP & TOPSIS (Decision-making models)
Data Collected	- Land use maps - Road network - Location of tourist landmarks - Public transport stops - Lighting, shading, and security data
Walkability Indicators	1. Accessibility – Distance from transit stops 2. Land Use Compatibility – Presence of tourism-related functions 3. Comfort – Shaded areas, benches

	4. Traffic Safety – Pedestrian-friendly zones 5. Security – Presence of active frontages, lighting 6. Imageability – Visual appeal and proximity to landmarks 7. Human Scale – Street width to building height ratio
Best Route Identified	From Darvazeh-Esfahan to Darvazeh-Kazerun – Includes traditional markets, shaded alleys, well-lit streets, benches, and cultural nodes
Key Findings	- Routes with more tourist landmarks, better lighting, and pedestrian furniture scored higher - Safety and comfort are essential for route popularity - Spatial integration and accessibility are key determinants of tourist footfall
Recommendations	- Implement pedestrian-first design strategies in historic areas - Improve lighting, shade, signage, and seating - Use GIS and space syntax in planning walkable tourist networks - Focus on heritage connectivity to enhance cultural tourism
Relevance to Hyderabad	Similar challenges in Hyderabad's old city (e.g., Charminar area) Learnings applicable for integrating heritage, tourism, and pedestrian planning in dense urban cores

Table 02 – Case study 1 Summary (Source – Author)

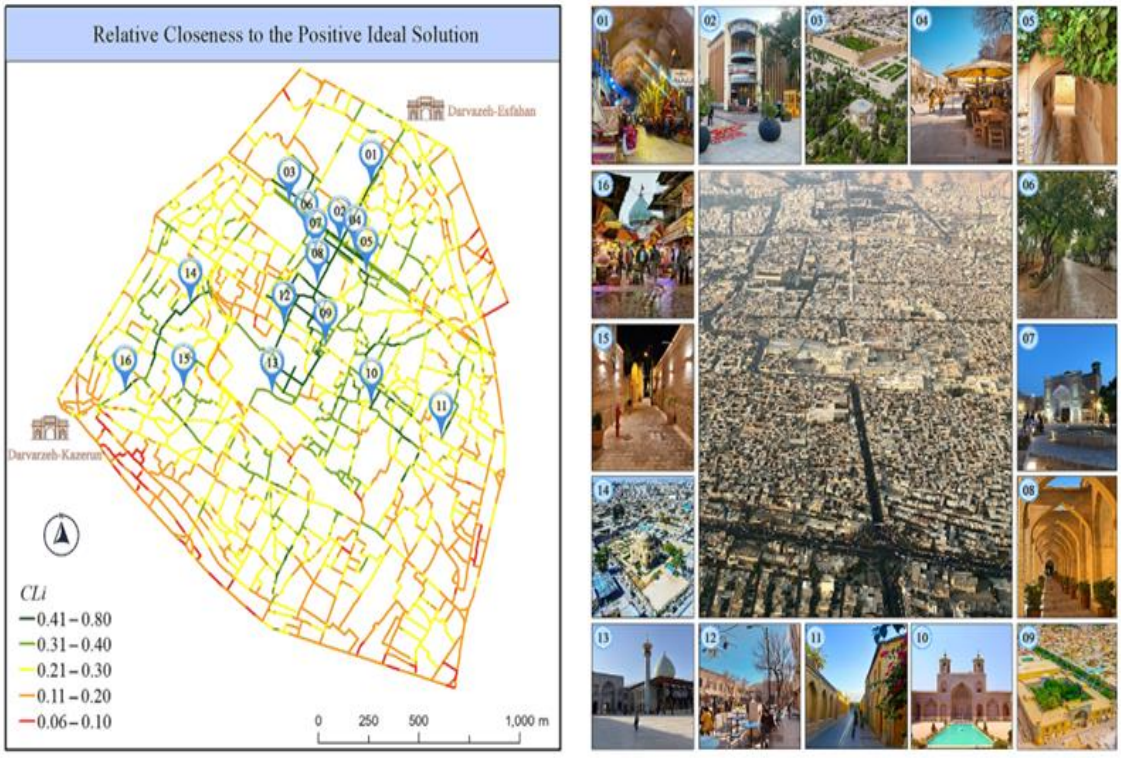


Fig. 5 The spatial distribution of the relative closeness to the ideal street segment. Source: The Authors, 2022.

Figure 09 – Map of Shiraz Historic District

2.4.2 Case study -2 Walkability in Riyadh : Al-Falah

To assess the implementation and effectiveness of walkability strategies in the Al-Falah neighbourhood, evaluating their impact on promoting sustainable, pedestrian-friendly communities in Riyadh, and to provide insights and recommendations for future urban planning initiatives. (Walkability in Riyadh: A Comprehensive Assessment and Implications for Sustainable Community—Al-Falah Case Study, 2024)

Challenges of Creating Walkable Communities in Riyadh

Climate and Weather Extreme heat, especially during summer (temperatures up to 50°C), discourages walking. Lack of shaded pathways and cooling infrastructure limits pedestrian activity. **Cultural and Societal Factors** Gender segregation and traditional cultural norms influence public space design. Limited spaces for social interaction; walking is sometimes seen as lower-status transportation. **Infrastructure and Design** Historically car-centric urban planning with wide roads and limited pedestrian infrastructure. Poorly connected pedestrian networks, lack of mixed-use development, and insufficient public transportation. **Urban Form Challenges:** Low-density, sprawling developments reduce walkability. Long distances between amenities discourage walking. **Safety and Security** Inadequate street lighting, intersections with vehicle paths, and privacy-focused architecture reduce surveillance. Perception of unsafe walking environments, particularly at night. **Connectivity Issues** The neighbourhood is bordered by major highways without pedestrian bridges Limited access to adjacent neighbourhoods restricts mobility .**Parking Problems** Cars parked on sidewalks due to insufficient off-street parking. Obstructed walkways pose hazards, especially for vulnerable populations.

Methodology of Investigation

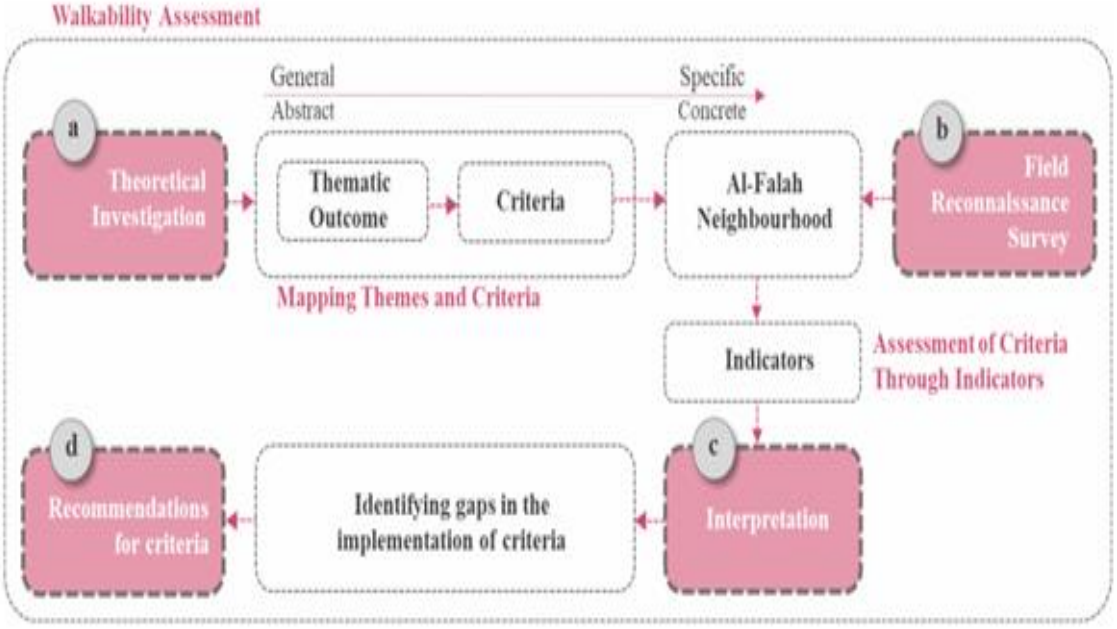


Figure 1. Methodology of investigation. Source: Authors.

Figure 10 – Demographic and Urban Features of Al-Falah Neighbourhood (source – Al- Falah neighbourhood Riyadh case study1

Category	Details
Location	Al-Falah Neighbourhood, Riyadh, Saudi Arabia
Urban Context	A low-density, car-oriented suburban neighbourhood with wide roads and limited pedestrian infrastructure
Problems Identified	- Extreme climate: High summer temperatures discourage walking - Lack of shaded walkways - Poor pedestrian connectivity - Car dominance and safety issues - Cultural constraints on public space usage
Objective	To assess the effectiveness of walkability strategies in Al-Falah and recommend improvements for creating pedestrian-friendly environments
Methodology	- Field surveys and on-site observations - Assessment of walkability indicators - Mapping of physical and demographic features
Indicators Used	1. Safety & Security – Lighting, vehicle speed, intersection design2. Comfort – Presence of street furniture, shade, restrooms3. Aesthetics – Streetscape quality, landscaping4. Connectivity – Street network integration, access between blocks
Tools & Data	- Observational surveys - Spatial analysis - Demographic profiling (age, gender) - Urban design audits
Key Findings	- Inadequate lighting and unsafe crossings reduce walkability at night - Poor street connectivity isolates pedestrian access - Extreme heat and lack of shade deter walking - Streets are wide but lack active frontages or inviting public realm
Challenges	- Cultural norms limiting social space use - Insufficient public investment in pedestrian infrastructure - Sidewalks often blocked by parked cars
Recommendations	- Introduce shaded pedestrian paths and trees - Add street lighting and signage for safety - Slow traffic with speed-reducing infrastructure - Improve connectivity with pedestrian bridges and linked pathways - Encourage mixed-use development to support foot traffic
Relevance to Hyderabad	Similar challenges with climate, wide roads, and poor pedestrian access in some parts of Hyderabad (e.g., outskirts and newer zones). Lessons can guide design of climate-responsive, safe walkable streets.

Table 03 – Case study 2 Summary (Source – Author)

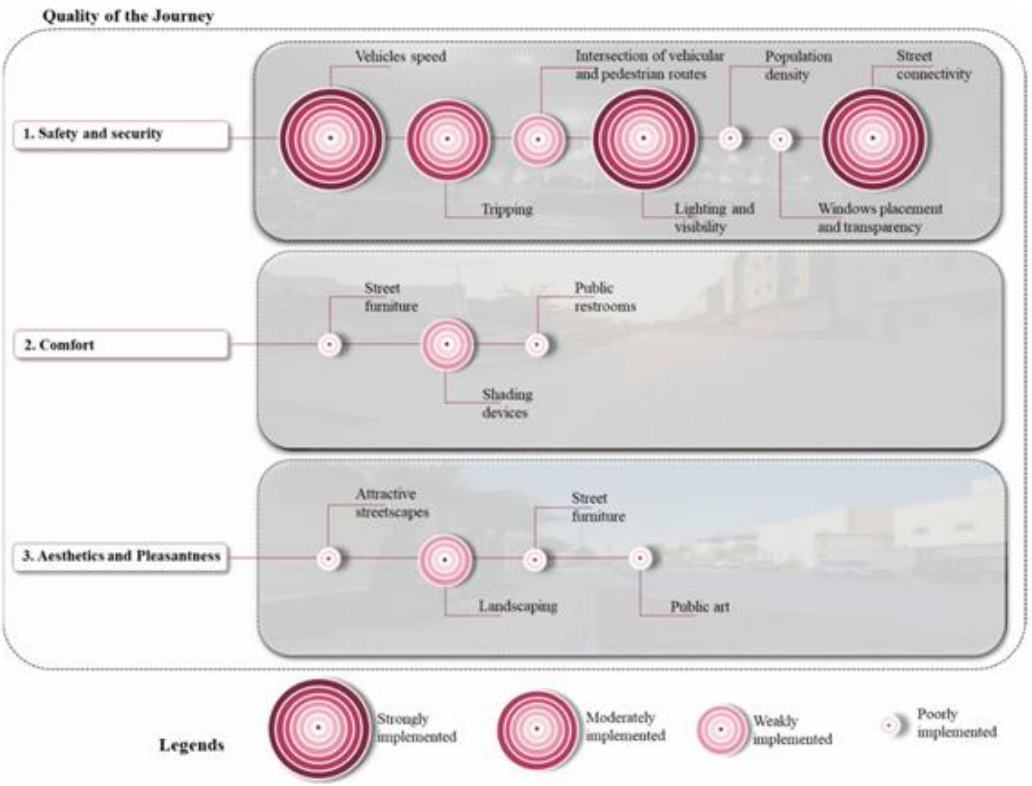


Figure 11- Quality of journey (source – Al- Falah neighbourhood Riyadh case study)

Conclusion:

The Al-Falah neighbourhood has made significant strides but faces challenges in infrastructure maintenance, cultural considerations, and connectivity. Improved planning and community involvement are key to transforming Riyadh into a walkable city.

The case study on walkability in Riyadh's Al-Falah neighbourhood highlights significant strides made under the Humanizing Neighbourhoods Initiative. The study underscores the importance of pedestrian-friendly infrastructure, mixed-use development, and community engagement in transforming a traditionally car-centric urban environment into a walkable one. Effective measures for speed control and well-maintained sidewalks. Good lighting enhances visibility and safety, particularly at night .Improved street connectivity within the neighbourhood promotes accessibility.

2.4.3 Case study 3 - Improving Walkability along Duke Street

Walkability, defined as the extent to which the built environment supports and encourages walking, plays a crucial role in creating sustainable and liveable cities. It enhances public health, reduces traffic congestion, and fosters social interactions. However, while walkability is well-established in many urban areas, suburban environments often face significant challenges in becoming pedestrian-friendly due to their car-centric design, low-density development, and fragmented infrastructure.

The City of Alexandria, Virginia, offers a striking contrast between its historic Old Town—known for its high walkability—and the suburban areas along Duke Street, which are dominated by vehicles and lack pedestrian infrastructure. This study focuses on transforming Duke Street into a vibrant, pedestrian-friendly corridor. By addressing existing challenges and leveraging opportunities, the project aims to create a model for enhancing walkability in suburban settings, contributing to the overall well-being of residents and promoting sustainable urban development.

This case study explores the unique context of Alexandria, highlighting the importance of thoughtful urban design in reviving suburban areas. Through comprehensive analysis and strategic interventions, it seeks to bridge the gap between theory and practice, providing actionable solutions for enhancing walkability along Duke Street (Walkability 2.0 A Specific Focus on the Reintroduction of Walkability in Detroit)

Figure 12 – Street Connectivity

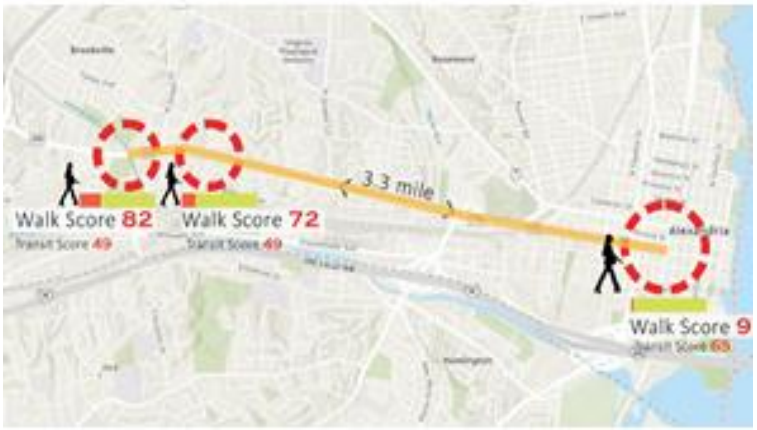


Figure 13 - Field Analysis Map – Duke Street

(Source - Duke Street Walkability Case study)

The walkability of the built environment is enhanced if the pedestrian network is connected to public transportation modes. This facilitates people to take public transport, reduces car dependency and increases the pedestrian flow. Moreover, if destinations within walking distance are well connected, then people will be encouraged to walk rather than drive. Jacobs and Pafka used the phrase “pools of use” to refer to the zone accessible by walking at a particular urban location measured by distance or time

Category	**Details**
Location	Duke Street, Alexandria, Virginia, USA
Urban Context	Suburban corridor with heavy car dependency, connecting historic Old Town (walkable) with low-density, vehicle-dominated areas
Problem Identified	- Car-centric design - Lack of continuous sidewalks and crosswalks - Poor integration with public transport - Safety concerns for pedestrians
Objective	To transform Duke Street from a vehicle-dominated corridor into a pedestrian-friendly and vibrant mixed-use urban space
Need for the Study	- Encourage active mobility - Improve public health - Reduce emissions - Promote inclusive, connected community life
Methodology	- Field observation and photographic audits - Mapping walkability scores - Community engagement for needs assessment - Policy and zoning review
Tools Used	- Smart Location Calculator - GIS Mapping - Walkability Scores (Walk Score Index) - Community feedback surveys
Walkability Parameters	1. **Accessibility** – Distance to key destinations (parks, schools, shops)2. **Safety** – Traffic calming, street lighting3. **Infrastructure** – Sidewalk condition, street crossings4. **Connectivity** – Links to transit and adjacent neighborhoods
Challenges Addressed	- Dead-end street networks - Absence of bike lanes and pedestrian infrastructure - Cultural preference for cars - Inconsistent zoning
Key Interventions	- Improved pedestrian crossings and continuous sidewalks - Traffic calming (raised crosswalks, speed signage) - Mixed-use zoning for better land use integration - Enhanced transit stops with better access
Findings	- Old Town had high walkability (score 90+), while western Duke Street showed potential (scores of 72 & 82) - Upgrades to sidewalk connectivity significantly improved perceived walkability
Outcomes	- Increased pedestrian activity - Stronger local business support - Greater community engagement - Safer environment for walking and cycling
Relevance to Hyderabad	Demonstrates how car-oriented areas can be made walkable through street design, transit integration, and zoning reform — applicable to modern parts of Hyderabad like Necklace Road and Hitech City

Table 04 – Case study 3 Summary (Source – Author)

2.4.4 Comparative Study: Walkability Improvements in Different Urban Contexts

Aspect	Shiraz, Iran	Duke Street, Alexandria, USA	Al-Falah, Riyadh, Saudi Arabia
Urban Context	Historic city core with rich cultural heritage and high tourist footfall	Suburban corridor between walkable Old Town and car-dominated areas	Low-density, car-centric neighborhood with urban sprawl
Primary Issue	Streets built for vehicles; unsafe and uncomfortable for tourists to walk	Vehicle-oriented infrastructure, fragmented sidewalks, weak transit access	Extreme heat, poor shade, cultural constraints, limited pedestrian facilities
Target Group	Domestic and international tourists exploring heritage landmarks	Residents and local businesses seeking more sustainable and walkable environments	Local residents; focus on creating livable, pedestrian-friendly communities
Methodology	GIS, AHP & TOPSIS analysis, Space Syntax, expert interviews	Field observations, GIS mapping, walkability score analysis, community engagement	Field surveys, observational audits, demographic profiling, walkability indicator assessment
Key Indicators	Accessibility, shading, safety, human scale, connectivity, heritage presence	Accessibility, safety, sidewalk quality, connectivity, land-use mix	Safety (lighting, vehicle speed), comfort (shade, benches), aesthetics, connectivity
Tools Used	ArcGIS, Google Earth, Space Syntax, Walk Score, AHP, TOPSIS	Smart Location Calculator, GIS, Walk Score, public feedback tools	Observational surveys, GIS tools, street audits
Challenges	- Poor lighting - Unsafe at night - Inaccessible historic areas for pedestrians	- Fragmented sidewalks - Speeding traffic - Zoning limitations	- Heat exposure - Lack of shaded routes - Vehicle-pedestrian conflict - Parking on footpaths
Best Interventions	Identified optimal tourist route (Darvazeh-Esfahan to Darvazeh-Kazerun); focused on heritage & shade	Continuous sidewalks, raised crossings, traffic calming, zoning for mixed use	Shaded pedestrian paths, lighting improvements, better access between blocks
Outcome/Impact	Enhanced route walkability; safer, tourist-friendly corridors; replicable model for heritage cities	Improved walkability scores, increased pedestrian activity, local business revitalization	Increased walkability potential; raised awareness of pedestrian infrastructure needs

Table 05– Case study Comparison analysis Summary (Source – Author)

2.4.5 Case Study Conclusion

The comparative examination of walkability case studies from Shiraz, Iran; Duke Street, Alexandria, USA; and Al-Falah, Riyadh, Saudi Arabia, highlights the multifaceted nature of pedestrian planning and its critical role in shaping inclusive, safe, and vibrant urban environments. Although each city varies in cultural, climatic, and spatial context, the core goal remains the same: to create walkable spaces that enhance quality of life, promote sustainable mobility, and, in the case of tourism, enrich the visitor experience.

In **Shiraz**, the challenge lay in transforming a congested historic core into a pedestrian-friendly tourist realm without compromising its cultural and architectural heritage. The study emphasized the value of spatial analysis tools such as GIS, Space Syntax, and multi-criteria decision-making models like AHP and TOPSIS. These tools enabled planners to identify optimal tourist routes based on factors like access to heritage sites, shading, safety, and comfort. The Shiraz case demonstrates how technology, expert consultation, and local data can together inform pedestrian network improvements in heritage zones—an approach highly relevant to historic areas of Hyderabad such as Charminar and Laad Bazaar.

The **Duke Street** case illustrates a suburban corridor's transition from a vehicle-dominated space to a more human-scaled, pedestrian-oriented environment. The study underscores the importance of community engagement, zoning reform, and mixed-use development in promoting walkability. Infrastructure interventions like continuous sidewalks, raised crossings, and safer public transit integration showed measurable improvement in walkability scores and pedestrian usage. This example is especially instructive for transitional zones in Hyderabad, such as Necklace Road and parts of Hitech City, where suburban development is expanding but lacks pedestrian connectivity.

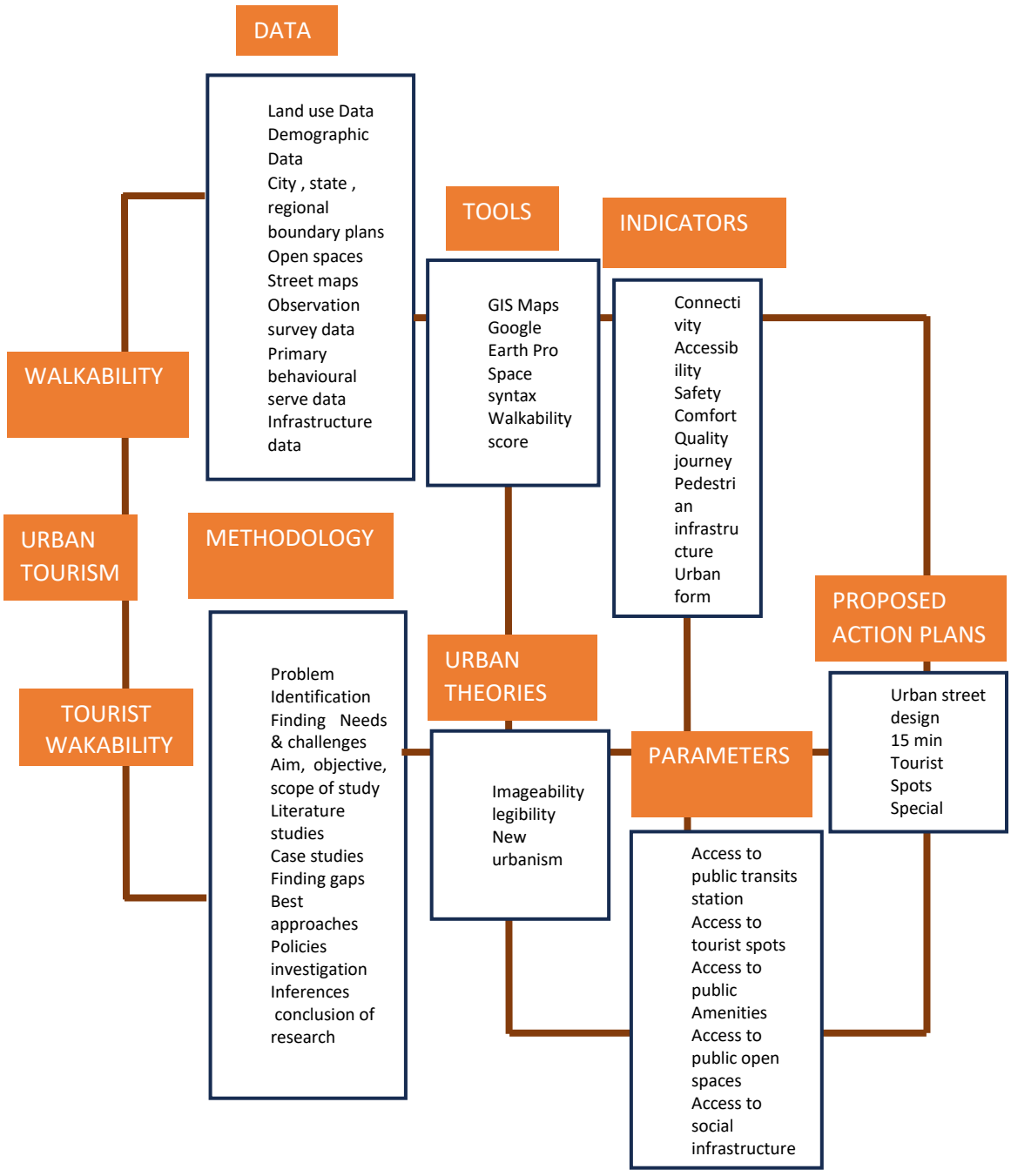
The **Al-Falah neighbourhood** in Riyadh presents a different urban challenge, dealing with harsh climatic conditions, cultural norms, and car-centric infrastructure. Despite its low density and wide roads, the study reveals that targeted micro-level interventions—such as increased shading, traffic calming, better lighting, and improved street connectivity—can significantly enhance walkability, even in difficult environments. This offers critical lessons for Hyderabad's newly developing residential areas and peripheries where extreme heat and poor pedestrian infrastructure discourage walking.

Across all three cases, a common theme emerges: walkability is not merely a matter of sidewalk construction—it is a comprehensive urban strategy that requires the integration of physical design, social inclusivity, technological tools, and policy alignment. It must consider user behaviour, land use diversity, comfort, safety, and cultural context. These case studies collectively affirm that successful walkability improvements are context-driven, stakeholder-supported, and strategically phased.

For Hyderabad, the lessons from these global examples reinforce the need for a holistic, data-informed, and user-centric approach to pedestrian planning. Whether addressing historic precincts, busy commercial corridors, or expanding suburban districts, the city can draw from these case studies to formulate responsive, inclusive, and resilient strategies to enhance walkability—ultimately transforming the urban experience for both residents and tour

2.5 Framework for Enhancing Tourist Walkability

Hyderabad has numerous tourist attractions like Charminar, Golconda Fort, Chowmahalla Palace, Laad Bazaar, and Hussain Sagar Lake. However, many of these locations are surrounded by traffic congestion, inadequate pedestrian infrastructure, and scattered urban development, which limits walkability for tourists. Using the diagram's structure, we can create a clear plan to improve walkability for visitors in Hyderabad.



2.6 Design and Planning Guidelines

S.No.	Category	Indian Design Guidelines	Indian Planning Guidelines
1	Connectivity	- Follow IRC:103-2012 for pedestrian facilities - Develop last-mile connectivity	- Integrate with IPT (auto-rickshaw/e-rickshaw) and bus transit - Promote TOD (Transit Oriented Development) near tourist hubs
2	Safety and Security	- Use street lighting as per BIS standards (IS 1944) - Design with Crime Prevention Through Environmental Design (CPTED) principles	- Plan police booths, emergency call points - Surveillance at key tourist areas
3	Comfort and Amenities	- Provide shaded walkways (using trees or colonnades) - Include public seating at 250m intervals (MoHUA advisory)	- Design public toilets every 500 m - Include drinking water points and vending zones
4	Accessibility	- Adopt Universal Accessibility Standards (Harmonised Guidelines by MoHUA 2021)	- Mandate accessible tourism planning - Ensure barrier-free access in all public tourist spaces
5	Wayfinding and Signage	- Use bilingual/trilingual signage (local + Hindi + English) - Follow IRC 67 for signage	- Establish sign hierarchy (directional, regulatory, tourist info) - Use QR-enabled guides
6	Street Design	- Implement Complete Streets as per ITDP and Smart City Guidelines - Minimum 2m-wide footpaths	- Pedestrianize heritage zones (e.g., Chandni Chowk model) - Avoid on-street parking in tourist streets
7	Aesthetics and Culture	- Incorporate local materials, murals, art installations - Landscaping with native species	- Revitalize historic streets and bazaars (e.g., HRIDAY scheme) - Maintain cultural character
8	Environmental Sustainability	- Use permeable paving - Encourage green walkways - Solar lighting for trails	- Promote eco-tourism planning principles - Avoid overdevelopment in ecologically sensitive zones
9	Technology Integration	- Set up smart kiosks with tourist info - Walkability mapping using GPS-based apps	- Use ICCC (Integrated Command and Control Centre) data to monitor tourist flows
10	Maintenance and Upkeep	- Public-private partnerships for upkeep - Community engagement in maintenance (e.g., RWAs, shop owners)	- Allocate Urban Local Body (ULB) funds for O&M - Adopt Swachh Bharat benchmark

Table 06 – Design and Planning Guidelines (Source – Author)

2.6.1 Policy and Governing Body

Policy / Initiative	Governing Body	Focus Areas & Key Objectives
National Urban Transport Policy (NUTP)	Ministry of Housing & Urban Affairs (MoHUA)	Include transport in urban planning - Integrated land use & transport - Prioritize people over vehicles - Promote public & non-motorized transport (NMT)
National Mission on Sustainable Habitat (NMSH)	MoHUA	Walk: Promote walkable neighbourhoods - Cycle: Create cycle networks - Connect: Dense, interconnected streets - Transit: Support high-quality public transport - Mode Shift: Use tech, regulation, parking policy
Atal Mission for Rejuvenation & Urban Transformation (AMRUT)	MoHUA	- Pedestrian-friendly street design - Improve parks & open spaces - Promote NMT to reduce pollution
Smart Cities Mission – Complete Streets Framework (2019)	MoHUA	Wide, safe footpaths - Pedestrian crossings, lighting - Healthy Streets concept - Improve urban walkability
National Pedestrian Policy (Draft)	MoHUA	Improve pedestrian safety & reduce accidents - Provide continuous footpaths & safe crossings - Awareness programs for walking & health
Pedestrian Infrastructure Guidelines (IRC)	Indian Roads Congress (IRC)	Standards for footpath width - Safe crossings, bridges, underpasses - Accessibility for differently-abled people

Table 07– Policy & By laws Table (Source – Author)

2.6.2 Policy and By Laws

The Indian government has launched key schemes to promote tourism and preserve heritage. The Swadesh Darshan Scheme focuses on developing themed tourist circuits with better infrastructure and eco-friendly practices. The PRASAD Scheme aims to improve facilities at pilgrimage sites, making them safer and more visitor-friendly. Additionally, national heritage policies emphasize restoring ancient monuments, setting up visitor centres, and enhancing accessibility to protect and showcase India's cultural legacy.

Scheme / Policy	**Ministry / Authority**	**Key Focus Areas / Objectives**
Swadesh Darshan Scheme	Ministry of Tourism, Govt. of India	Develop tourist circuits (religious, cultural, heritage) - Promote sustainable & eco-friendly tourism - Improve basic tourism infrastructure
PRASAD Scheme (Pilgrimage Rejuvenation and Spiritual Augmentation Drive)	Ministry of Tourism, Govt. of India	Enhance facilities at spiritual/pilgrimage sites - Develop pathways, parking, toilets, landscaping - Improve safety & comfort for pilgrims
National Policies for Conservation of Ancient Monuments	Ministry of Culture / ASI	Restoration & maintenance of monuments - Educate tourists through signage, displays, and visitor centres - Improve access & amenities (security, transport)

Table 08 – Policy , Authority & Objectives (Source – Author)

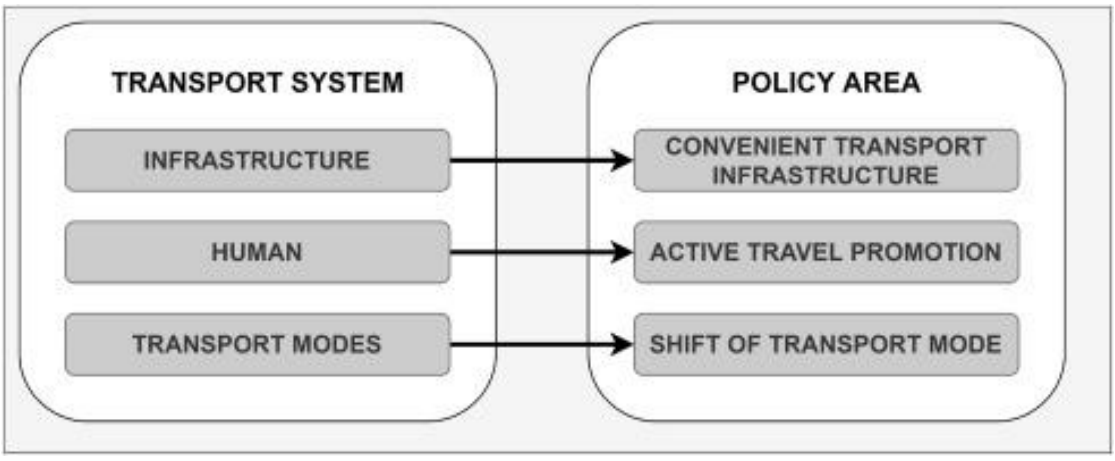


Figure 14 – Planning Guidelines – Overview

2.6.3 Policies Gap

Transportation policies in India face several gaps that hinder the development of a sustainable, efficient, and inclusive transport system. These gaps arise from inadequate policy frameworks, lack of integration across transport modes, limited funding, and issues with implementation.

- **Lack of Comprehensive and Integrated Transport Policies**

Gap: There is no cohesive national transport policy that integrates all transport modes (road, rail, air, water) and aligns them with urban planning, environmental goals, and economic development. This fragmentation results in inefficiencies, delays, and missed opportunities for optimizing intermodal connectivity.

- **Poor Last-Mile Connectivity**

Gap: There is a lack of coordination between transportation modes, leading to poor **last-mile connectivity**, especially for **public transport** systems like buses, metros, and trains. People often have difficulty accessing public transport, which increases dependence on private vehicles and contributes to congestion and pollution.

- **Inadequate Public Transport Systems in Smaller Cities and Rural Areas**

Gap: Public transport options are often limited to large metropolitan areas, leaving smaller cities and rural regions under-served. This inequality in transport access hampers economic growth, mobility, and accessibility to services such as education and healthcare in less urbanized regions.

- **Inefficient Urban Mobility Planning**

Gap: Urban transport policies in India often fail to account for the rapid growth of cities and the increasing need for **pedestrian infrastructure**, **public transport**, and **cycling facilities**. Many cities are designed for car-centric development, leading to overcrowded roads, poor air quality, and lack of walkability

Weak Public Awareness and Behavioural Change

Gap: Transportation policies often fail to engage the public in terms of changing behaviour, particularly concerning **sustainable transport** modes and **road safety**. Limited public acceptance of new transport initiatives, high use of private vehicles, and low adoption of cleaner transport options like public transit and cycling.

2.7 Technological Interventions (Walkability measuring tools)

Tool	Type	Description	Key Metrics / Indicators
Walk Score	Index-Based	Online tool rating walkability based on proximity to amenities	Score (0–100), amenity access
Street Smart Walk Score (SSWS)	Enhanced Index-Based	Adds pedestrian infrastructure and crossing difficulty to Walk Score	Amenity proximity + pedestrian-friendliness indicators
PEDS (Pedestrian Environment Data Scan)	Field Survey Tool	Checklist-based audit of pedestrian infrastructure and environment	Sidewalk quality, crosswalks, traffic speed, path comfort
5D Model of Built Environment	Analytical Framework	Evaluates built environment using 5 dimensions	Density, Diversity, Design, Destination accessibility, Distance to transit
International Walkability Index (IWI)	Global Scoring Tool	Assesses walkability globally across safety, comfort, and infrastructure	Sidewalk presence, crosswalk safety, lighting, safety, convenience
GIS-Based Walkability Analysis	Spatial Analysis Tool	Uses GIS to analyse multiple spatial datasets related to walking	Sidewalk density, street connectivity, land use mix, transit accessibility
Space Syntax	Modelling Software	Predicts pedestrian flow using spatial configuration and connectivity analysis	Integration, choice, visibility, accessibility
HEAT (Health Economic Assessment Tool)	Health & Economic Tool	WHO tool estimating health benefits from walking	Reduced mortality, economic valuation of walking activity
Pedestrian Level of Service (PLOS)	Performance Assessment Tool	Evaluates pedestrian facility performance from a user's perspective	Comfort, safety, efficiency, accessibility

Table 09 – Walkability Measuring Tools (Source – Author)

Walkability is a critical aspect of sustainable urban and tourist planning, directly influencing the quality of life, visitor experience, public health, and environmental sustainability. The evaluation of walkability through various tools—ranging from simple index-based methods like Walk Score to advanced spatial models like Space Syntax and GIS-based analysis—enables a comprehensive understanding of pedestrian needs and urban form.

Chapter 3: Study Area Profile

Chapter 3 provides an in-depth profile of **Hyderabad**, the selected study area for evaluating tourist walkability. As one of India's prominent tier-1 cities, Hyderabad is renowned for its rich cultural heritage, historical landmarks, and modern urban developments, making it an ideal setting to study the intersection of tourism and pedestrian infrastructure. This chapter sets the contextual groundwork by exploring the city's **historical, cultural, and tourism significance**, its **demographics**, and the existing urban and tourism infrastructure.

Hyderabad's **historical evolution**, from its foundation by Muhammad Quli Qutb Shah in 1591 to its transformation into a global IT and cultural hub, is highlighted to establish its importance as a tourist destination. The chapter outlines the **polycentric urban structure** of the city, with distinct zones like the **Charminar area (Old City)**, **Necklace Road**, and **Hitech City**, which serve different demographic and functional purposes.

The **demographic analysis** presents Hyderabad as a rapidly urbanizing metropolis with over 10 million residents, showcasing its diverse population, economic drivers, and cultural vibrancy. This diversity is reflected in its tourism appeal, which attracts domestic and international visitors seeking heritage, cuisine, and urban experiences.

The chapter also examines the **existing tourism infrastructure**, including heritage zones, transit systems like the Hyderabad Metro, and hospitality services. However, it identifies challenges such as poor pedestrian connectivity, lack of shaded walkways, and inadequate safety measures, which hinder tourist movement and experience. These gaps are analysed to justify the need for targeted interventions in walkability planning.

Finally, the chapter contextualizes Hyderabad's **urban mobility framework**, including the role of agencies like **HMDA** and **GHMC**, alongside initiatives like the **Smart Cities Mission** and the **Strategic Road Development Plan (SRDP)**, which aim to enhance the city's urban infrastructure. These efforts set the stage for evaluating and addressing the deficiencies in tourist walkability, making this chapter a critical foundation for subsequent analysis and proposals.

3.1 Study Area Profile

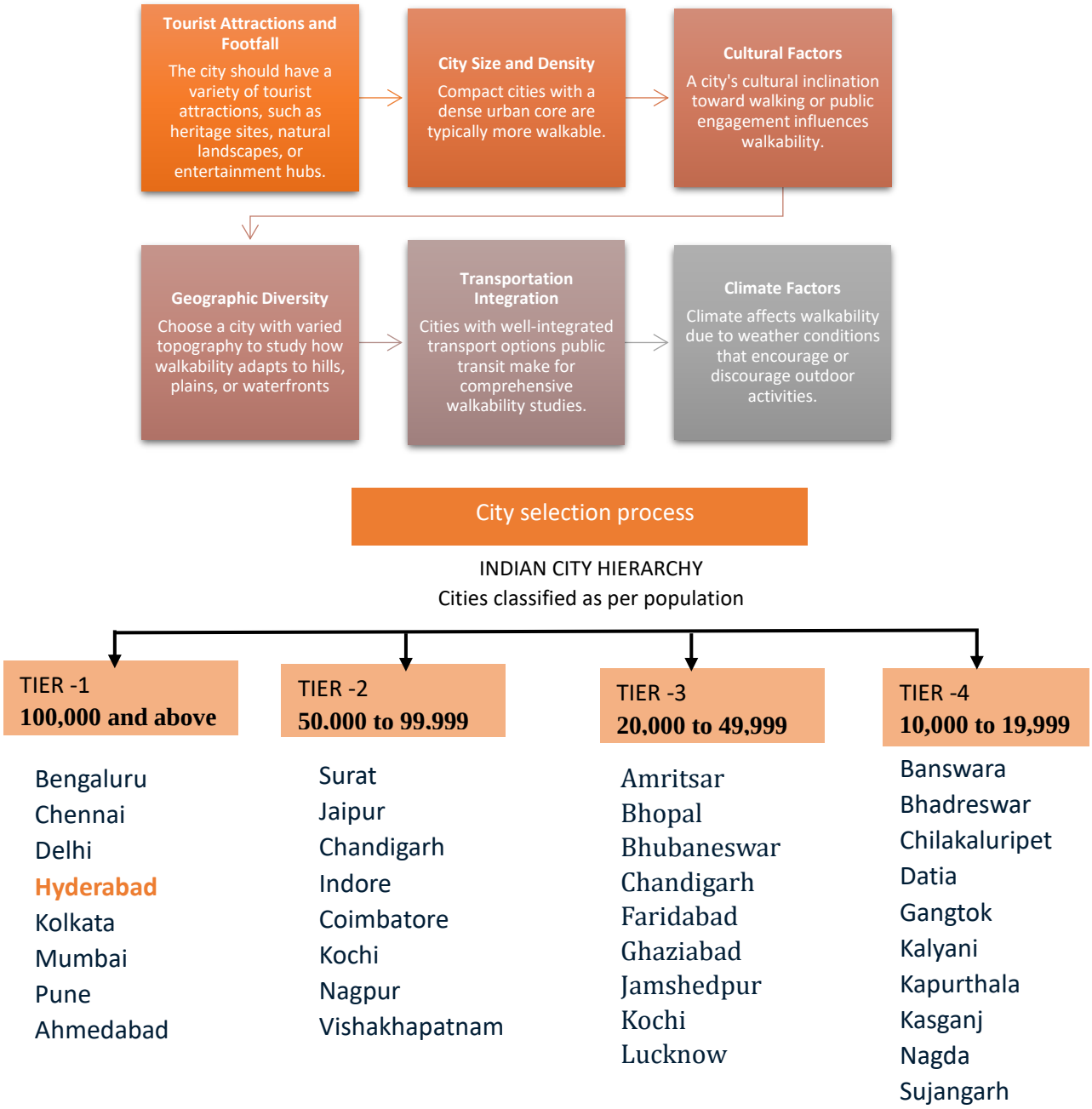
Criteria for Selecting a Tourist City

Cities across the country have witnessed significant changes over the past 10-15 years on the back of high economic growth, infrastructure development and evolution of the services sector. If the six metros — New Delhi, Mumbai, Chennai, Kolkata, Hyderabad and Bangalore — witnessed the bulk of development in the first phase, the next phase will see the emergence of tier II and III cities with a sizeable jump in their economic activities.

Diverse Tourist Base

Hyderabad attracts a variety of tourists: heritage enthusiasts, foodies (famous for biryani and Irani chai), IT professionals, and leisure travelers.

The diversity of the tourist base offers insights into how different groups use pedestrian infrastructure.



3.2 Historical, Cultural, and Tourist Significance

Location and Geography:

Hyderabad, the capital city of Telangana, is situated on the Deccan Plateau in south-central India. It lies between 17.3850° N latitude and 78.4867° E longitude. The city covers an area of approximately 650 sq. km and lies at an average elevation of 542 meters above sea level. The Musi River flows through the city, dividing it historically into northern and southern zones.

Historical Background:

Founded in 1591 by Muhammad Quli Qutb Shah, Hyderabad has a rich cultural and architectural heritage. The city evolved from the Charminar core to a princely capital under the Nizams and has grown into a major urban agglomeration after independence.

Urban Structure and Land Use:

The city exhibits a polycentric urban structure with old Hyderabad (Charminar area), the central business district (CBD) around Abids and Basheerbagh, and emerging hubs like

Gachibowli, Madhapur, and Nanakramguda. Land use includes residential, commercial, industrial, institutional, recreational, and mixed-use development. The land use across Hyderabad includes a mix of residential, commercial, institutional, recreational, industrial, and mixed-use categories. Residential areas are spread throughout the city, with higher densities in older quarters and new townships developing in the peripheries. Commercial zones are prominent in traditional markets like Laad Bazaar and Sultan Bazaar, as well as in newly developed areas such as Hitech City. Institutional land use includes educational campuses, administrative offices, and healthcare facilities. Recreational land is marked by public parks, lakefronts such as Hussain Sagar, and urban green spaces. Industrial uses are primarily located in designated zones on the city's fringes. Hyderabad's planning is governed by the HMDA Master Plan 2031, which emphasizes integrated land use and transport planning through Transit-Oriented Development (TOD) and mixed-use corridors

3.3 Demographic and Urban Context

Demographics:

According to Census 2011, the population of Greater Hyderabad was around 6.9 million, making it India's fourth-largest city. The current estimated population (2024) is over 10 million, indicating a rapid urban growth trajectory. It has a diverse population with a mix of linguistic, religious, and cultural communities.

EconomicProfile:

Hyderabad is a major economic and technological hub, often referred to as "Cyberabad" due to its prominent IT/ITES sector. It also has strong pharmaceutical, biotechnology, manufacturing, and service sectors. HITEC City and Genome Valley are major employment

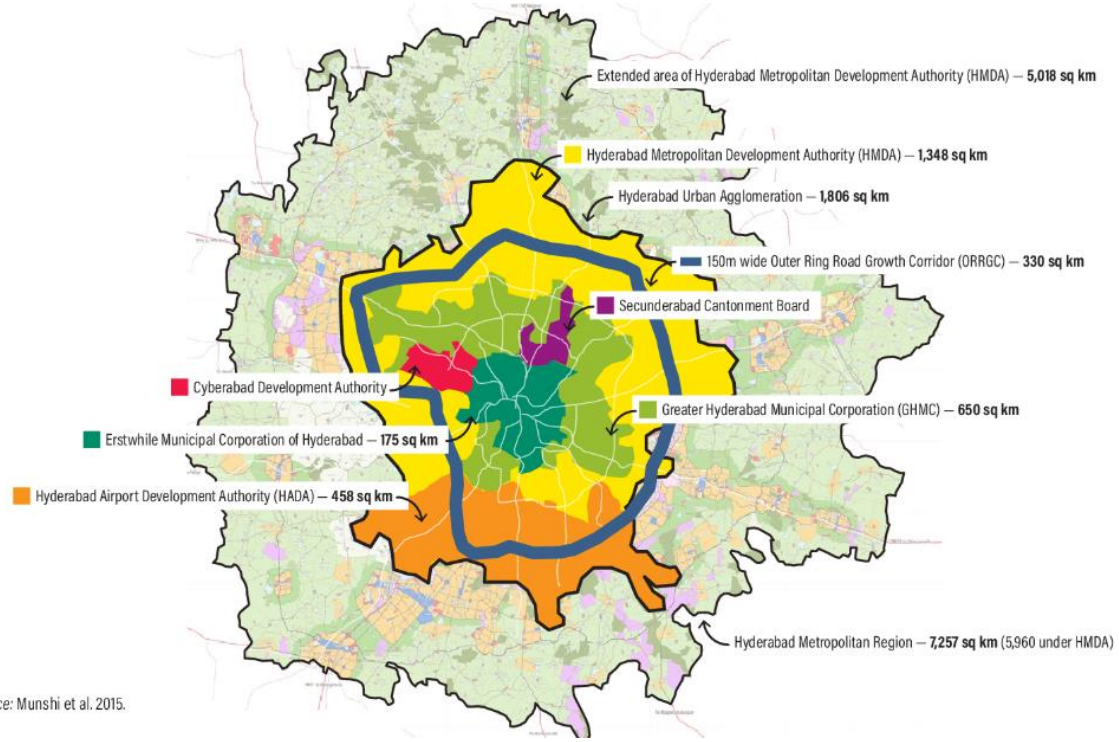

Extended area of Hyderabad Metropolitan Development Authority (HMDA) – 5,018 sq km
Hyderabad Metropolitan Development Authority (HMDA) – 1,348 sq km
Hyderabad Urban Agglomeration – 1,806 sq km
150m wide Outer Ring Road Growth Corridor (ORRGC) – 330 sq km
Secunderabad Cantonment Board
Cyberabad Development Authority
Greater Hyderabad Municipal Corporation (GHMC) – 650 sq km
Erstwhile Municipal Corporation of Hyderabad – 175 sq km
Hyderabad Airport Development Authority (HADA) – 458 sq km
Hyderabad Metropolitan Region – 7,257 sq km (5,960 under HMDA)
Source: Munshi et al. 2015.

Figure15 – Greater Hyderabad Authority areas (Source – HDMA)

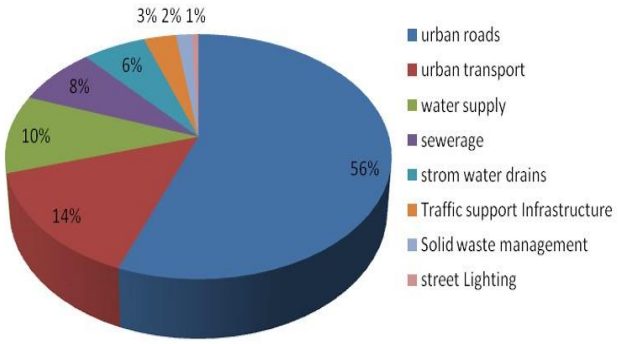


Figure 11-8: Relative share of Major Urban Infrastructure Investment Requirements

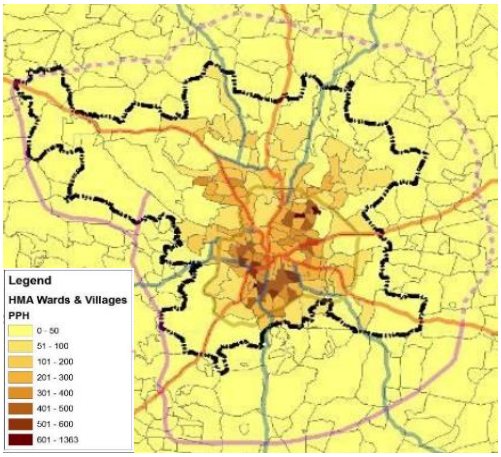


Figure16 –Hyderabad Demographic Profile (Source – HDMA)

Transport and Infrastructure:

Hyderabad has a well-connected transport network with road, rail, and air services. The Hyderabad Metro Rail, TSRTC bus services, and MMTS suburban trains cater to public transit. The Outer Ring Road (ORR) and upcoming Regional Ring Road (RRR) support regional connectivity. Rajiv Gandhi International Airport serves as a major aviation hub.

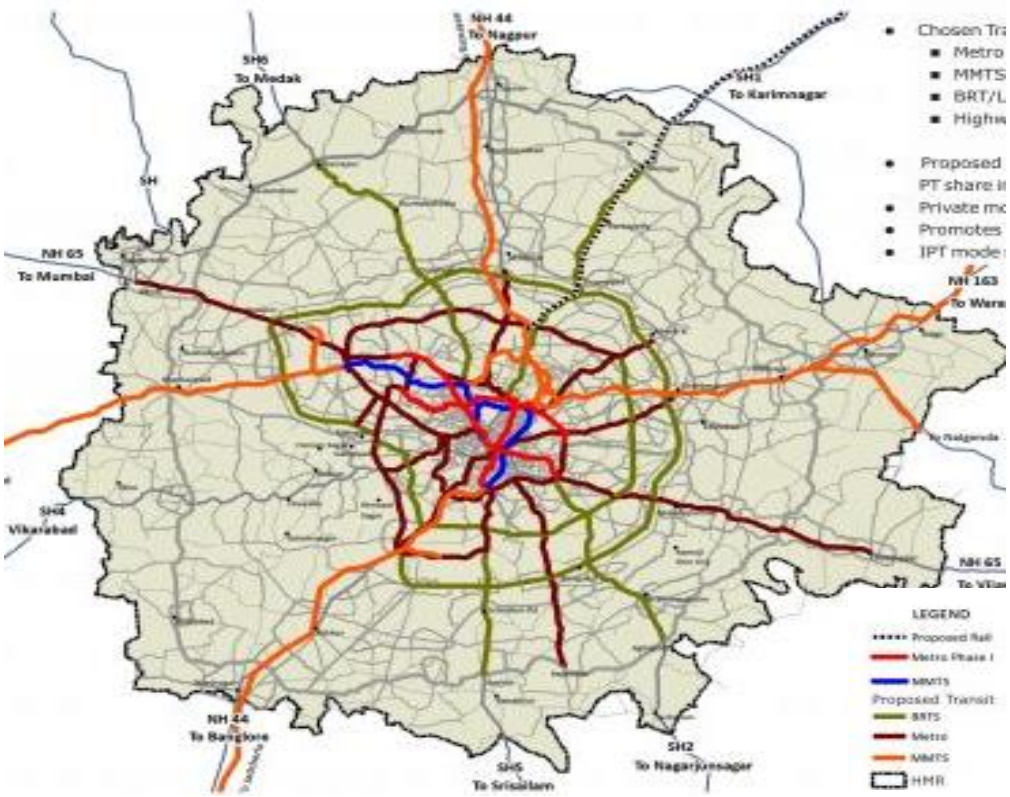


Figure17 –Hyderabad Transportation (Source – HDMA)

Planning Jurisdiction and Agencies:
Urban planning and governance are managed by agencies such as:

- Hyderabad Metropolitan Development Authority (HMDA)
- Greater Hyderabad Municipal Corporation (GHMC)
- Telangana State Industrial Infrastructure Corporation (TSIIC)
- Hyderabad Growth Corridor Limited (HGCL) Hyderabad follows a Master Plan approach, with the HMDA 2031 Master Plan guiding its spatial development.
-

Challenges in Urban Planning:

- Unplanned peri-urban expansion
- Traffic congestion and inadequate public transport in some areas
- Urban flooding (especially near Musi River and low-lying areas)
- Environmental degradation and loss of water bodies
- Affordable housing shortage
- Heritage conservation amid modernization

Opportunities and Vision:
Hyderabad aims to become a global city with sustainable urban infrastructure. Key development initiatives include Smart City Mission, Strategic Road Development Plan (SRDP), riverfront development, and transit-oriented development (TOD) policies. The city is also pushing for greener, resilient planning aligned with Sustainable Development Goals (SDGs).

3.4 Existing Tourism Infrastructure

In 2023, 20.32 lakh people visited Hyderabad by air, which is a 16% increase from 2022
In 2022-2023, 6.07 lakh domestic tourists visited Telangana, which is an 89.84% increase from 2021-2022In 2022-2023, 68,401 foreign tourists visited Telangana, which is a 1056.01% increase from 2021-2022
The hotel industry in Hyderabad grew by 63.6% in 2023, which is higher than the 43.1% growth in 2021

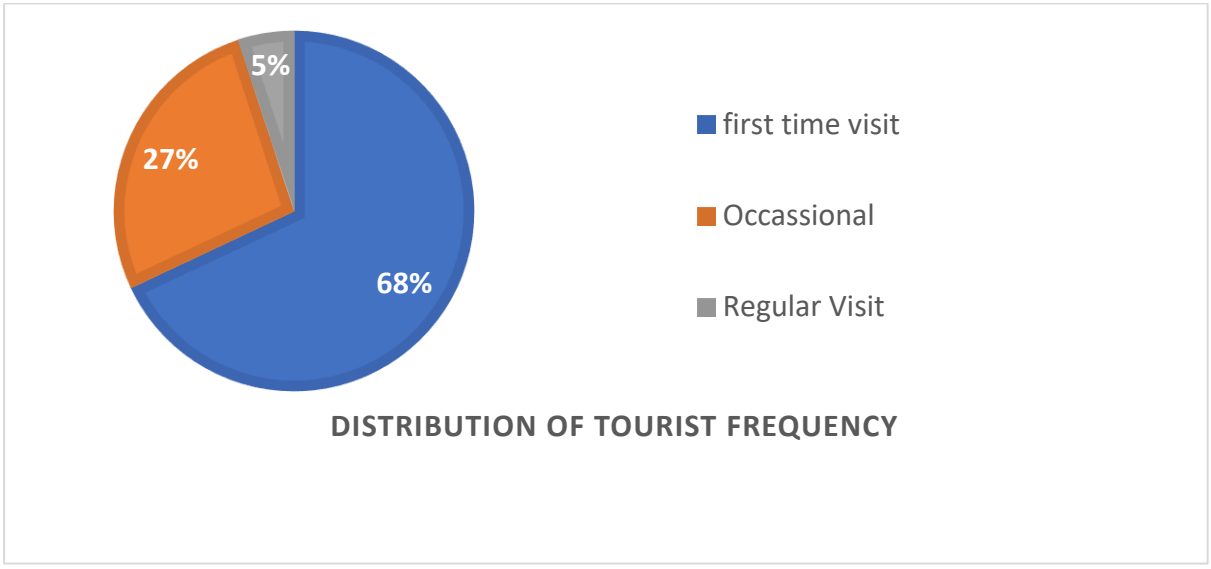


Figure18 – Hyderabad Tourist Frequency (Source – TGTDC)

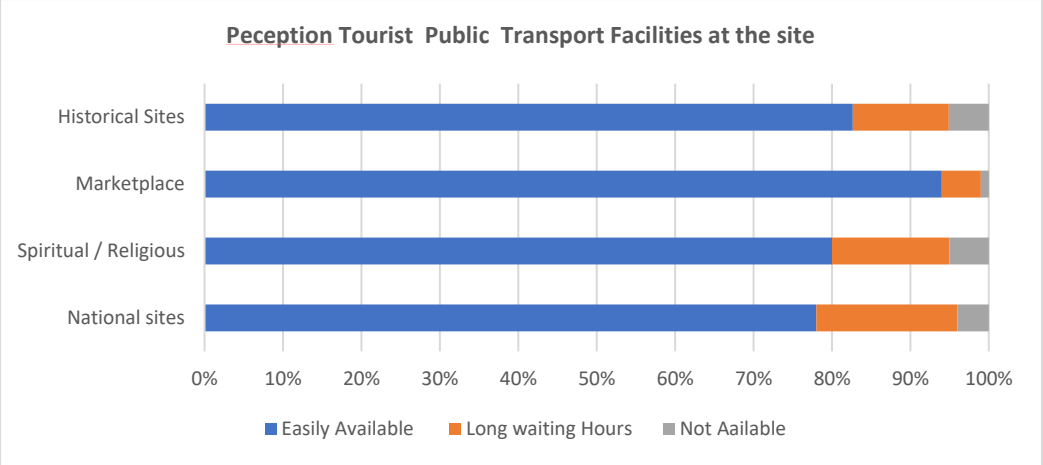
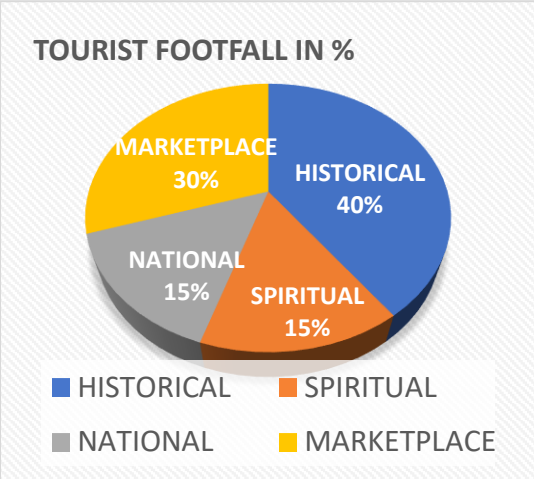


Figure 18



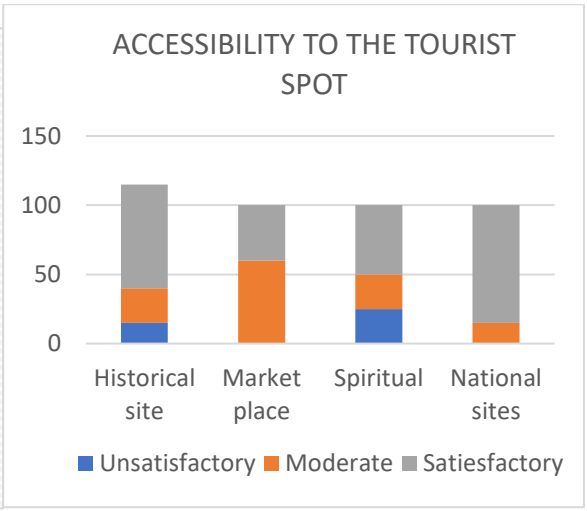


Figure 19 & 20 – Hyderabad Tourist Transport facilities & footfall (Source – TGTDC)

Urban Development and Smart City Initiatives

Hyderabad is part of the Smart Cities Mission, which includes projects focusing on urban mobility and walkability.
Upgraded pedestrian infrastructure, such as skywalks, pathways, and public spaces in areas like the Hitech City and Tank Bund Road.
Strategic Road Development Plan (SRDP): Projects aimed at pedestrian safety and accessibility in key tourist areas.

Challenges to Walkability

Encroachments & Poor Maintenance: Footpaths often occupied by street vendors, forcing pedestrians onto roads.
Lack of Shaded Walkways: Hyderabad's climate (hot summers) discourages walking in many areas.
Traffic & Safety Issues: High-speed traffic, lack of pedestrian signals, and poor enforcement of zebra crossings.

3.5 Mobility and Accessibility Overview

The Hyderabad Metro Rail is a modern rapid transit system that plays a vital role in enhancing urban mobility and reducing traffic congestion in Hyderabad, Telangana. Spanning approximately 69.2 kilometres, it is the third-largest metro network in India and operates three main corridors—Red, Blue, and Green. The Red Line runs from Miyapur to LB Nagar, passing through key residential and commercial hubs such as Kukatpally, Ameerpet, and Dilsukhnagar. The Blue Line connects Nagole to Raidurg, serving important zones like Secunderabad, Tarnaka, and HITEC City, while the Green Line connects JBS Parade Ground to MG Bus Station. The metro network includes major interchange stations at Ameerpet, Parade Ground, and MGBS, allowing seamless travel across corridors.

In addition to current operations, the Hyderabad Metro is undergoing significant expansion under Phase 2, which aims to add approximately 63 kilometers. This includes extensions towards Kokapet, Patancheru, Chandrayangutta, and the Rajiv Gandhi International Airport, enhancing regional connectivity. Sustainability is a core focus, with initiatives like solar-powered stations, regenerative braking, and rainwater harvesting. Overall, the Hyderabad Metro is a model of integrated, sustainable urban transportation in India, supporting the city's rapid growth and development.

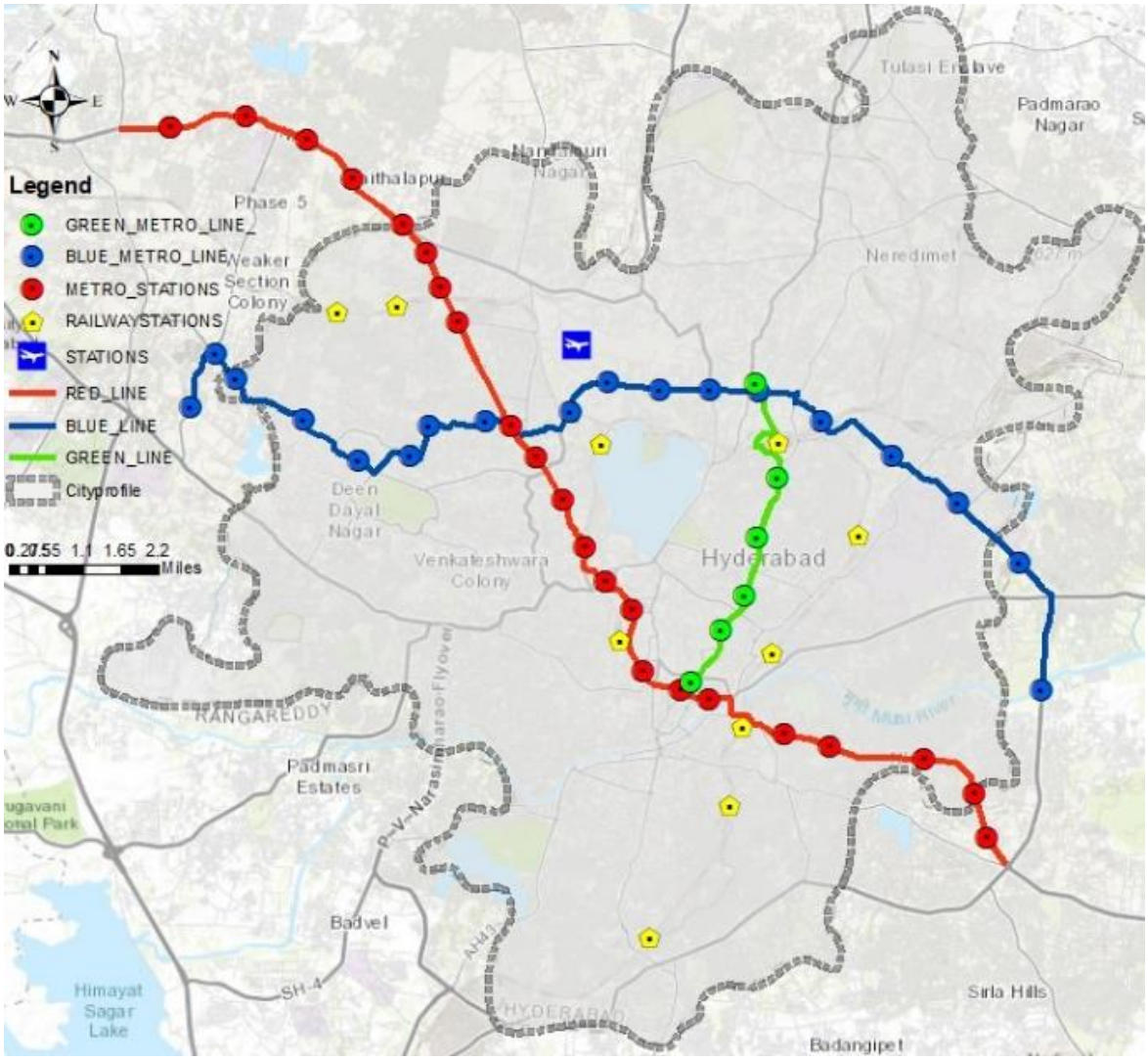


Figure 21 – Hyderabad Transit map (Source – HDMA)

Chapter 4: Existing Walkability Assessment –

4.1 Introduction

Chapter 4 marks a critical transition in the study as it shifts from theoretical understanding and contextual background to the practical evaluation of existing pedestrian infrastructure in Hyderabad's key tourist zones. This chapter lays the groundwork for diagnosing real-world walkability conditions that tourists encounter, thereby forming the empirical core of the research.

Hyderabad, while rich in cultural heritage and urban diversity, displays significant discrepancies in walkability across its tourist destinations. Iconic sites such as Charminar, Golconda Fort, Laad Bazaar, and Hussain Sagar attract high tourist footfall but lack cohesive, continuous, and safe pedestrian infrastructure. As a result, this chapter focuses on evaluating these current conditions through a multi-layered assessment framework.

The chapter begins by introducing walkability audit parameters, which are categorized into key indicators—accessibility, connectivity, safety, comfort, continuity, and visual quality. These factors reflect global best practices while being tailored to the specific challenges and spatial morphology of Hyderabad.

To operationalize this evaluation, the study employs a combination of data collection techniques:

Field surveys and direct observations to understand on-ground realities.

Tourist and stakeholder interviews to gather user-centric insights.

Footfall counts and behavioral tracking to quantify usage patterns.

Spatial analysis tools like GIS mapping, heat mapping, NDVI (Normalized Difference Vegetation Index), and Space Syntax are used to visualize and analyze the urban form, highlighting how spatial configuration affects pedestrian flows and accessibility. These tools help reveal physical discontinuities, shade-deficient areas, and missing links in the pedestrian network—especially around high-traffic tourist corridors.

Furthermore, the chapter integrates a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) to holistically assess the environment from a strategic planning perspective. This adds depth to the analysis by considering governance, maintenance, stakeholder roles, and opportunities for tactical urbanism and smart interventions.

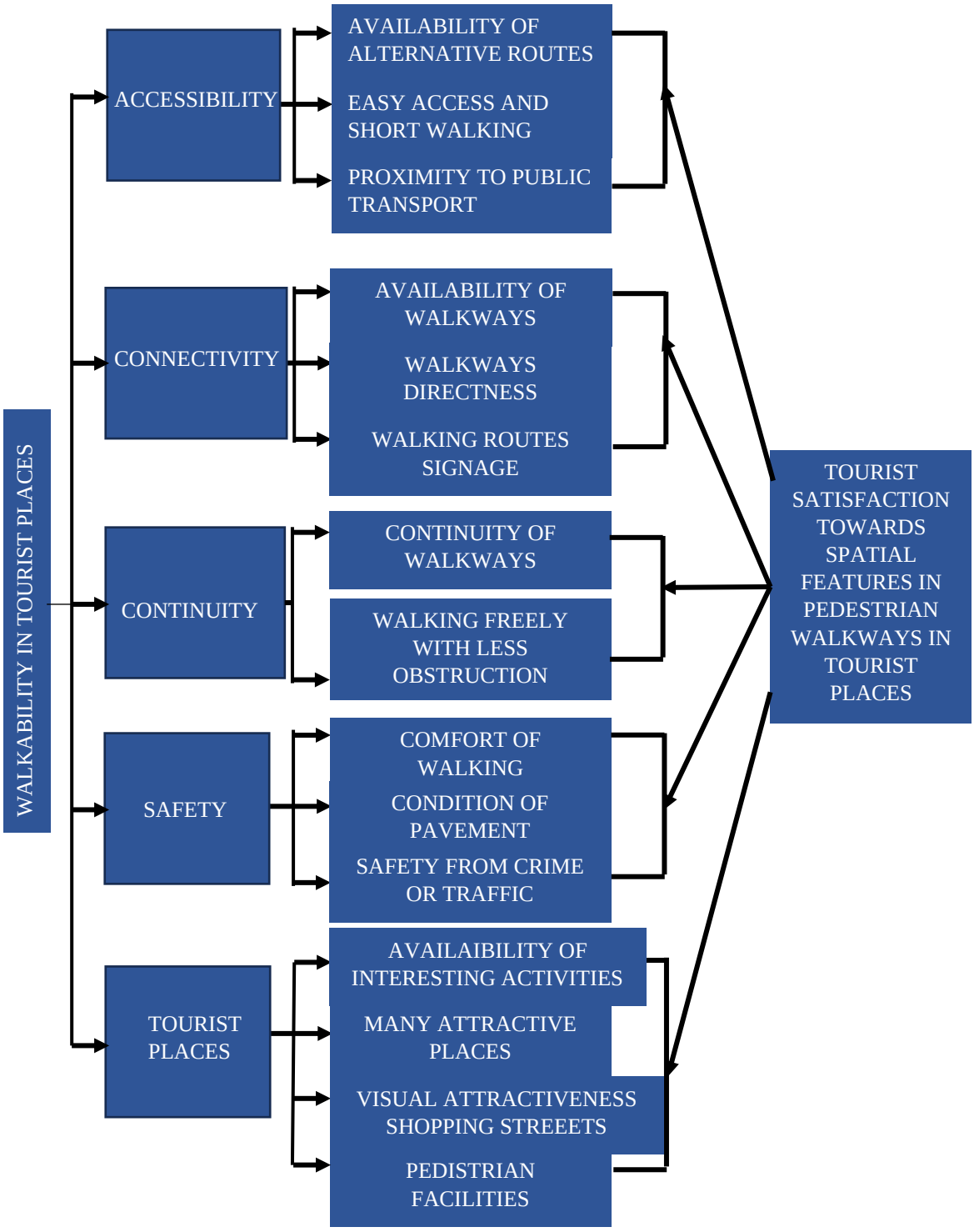
Visual aids like tourist circuit maps, walkability buffers, and accessibility overlays are presented to communicate gaps and potentials in pedestrian mobility.

In summary, this chapter not only diagnoses existing walkability issues through robust analysis but also sets a data-driven foundation for the proposals and interventions in Chapter 5. It bridges theory with practice, quantifying the challenges and needs for transforming Hyderabad into a tourist-friendly walkable city.

4.2 Walkability Audit Parameters

4.2.1 Parameters

Tourist walkability parameters refer to the key criteria used to evaluate how accessible, convenient, and enjoyable it is for tourists to explore a destination on foot. These parameters ensure that walkable areas are designed to enhance the visitor experience, support local economies, and promote sustainable tourism.



4.2.2 THE DIMENSION OF OBSERVED AUDIT TOOLS SURVEY

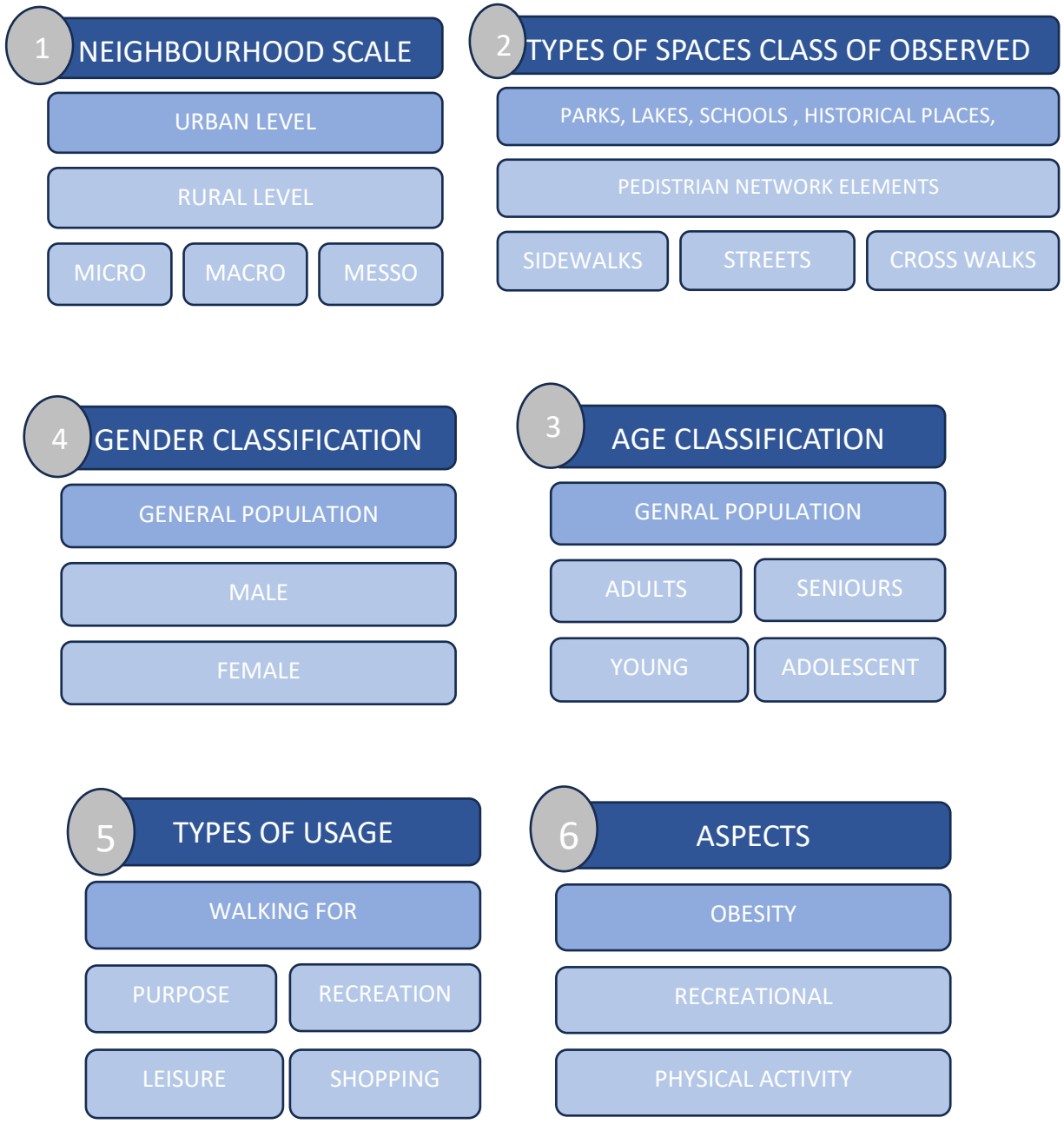


Table 10 – Walkability Measuring Indicators (Source – Author)

4.2.3 INDICATORS

SR No.	INDICATOR	SUB INDICATOR	DATA SOURCE	MAPS
1.	Density	Population density	Census 2011	
2.	Land use	Types of land use	City land use map	City land use map
3.	Nmt transportation	Streets	Road map	Road map
1.	Public transit stations	Population density	Census 2011	
2.	Land use	Types of land use	City land use map	City land use map

SR No.	INDICATOR	SUB INDICATOR	MAPS
1.	Access to public transport	ACCESSIBILITY	Road map
2.	Inclusive and accessible streets		Road map
3.	Access to open spaces		City land use map
4.	Access to lakes		City land use map
5.	Access to Heritage buildings and landmarks		City land use map

Table 11 – Walkability Measuring Indicators (Source – Author)

SR.NO.	Analysis	Purpose	Methods
1.	Descriptive Analysis	Summarize the data and identify patterns.	1. Frequency tables and graphs (e.g., pedestrian counts, preferred routes). 2. Percentage breakdowns (e.g., satisfaction levels, age group preferences). 3. Average scores for survey responses (e.g., safety ratings).
2.	Geographic Information System (GIS) Analysis	Spatially analyze walkability factors and visualize pedestrian networks.	1. Heat Maps: Identify high-traffic pedestrian zones and underutilized areas. 2. Buffer Analysis: Evaluate the accessibility of tourist attractions within walking distances. 3. Network Analysis: Assess the connectivity and shortest paths between key tourist destinations. 4. Overlay Analysis: Combine layers like footpath quality, amenities, and safety data.
3.	Behavioral Analysis	Understand tourist walking preferences and patterns.	1. Analyze GPS data or mapping applications for route preferences and time spent walking. 2. Study peak pedestrian hours and crowd movement trends. 3. Use time-motion studies to observe walking speed and stops at various points.
4.	Walkability Index Calculation	Measure the walkability of a given area using a composite index.	1. Sidewalk width and quality. 2. Pedestrian crossings and traffic safety. 3. Proximity to tourist attractions. 4. Presence of shade, greenery, and street furniture. Assign weights to indicators and calculate a score for each area or route.

5.	Visual and Photographic Analysis	Assess qualitative aspects of the pedestrian environment.	1. Evaluate street aesthetics, signage, and wayfinding elements. 2. Identify areas requiring maintenance or enhancement. 3. Use before-and-after comparisons to showcase improvement areas.
6.	Statistical Analysis	Identify correlations and trends in the data.	1. Correlation Analysis: Examine the relationship between walkability and tourist satisfaction. 2. Regression Analysis: Determine how factors like safety, amenities, or connectivity influence walkability scores. 3. ANOVA or T-tests: Compare walkability perceptions across different tourist groups (e.g., age, gender).
7.	Accessibility Analysis	Evaluate ease of access for pedestrians, especially those with disabilities.	1. Slope Analysis: Identify areas with steep gradients or barriers. 2. Pathway Continuity Assessment: Check for breaks in the pedestrian network. 3. Level of Service (LOS): Grade pathways based on factors like width, obstruction, and pedestrian comfort.

Table 12 – Analysis Methods for Walkability Assessment (Source – Author)

4.2.4 Assessments

Accessibility	Comfort and use	Environmental Aesthetics	Safety and Security	Connectivity
Compliance with pedestrian use	Service areas Activity areas	Preservation Environmental care	Traffic crime	Path network Linkages with other modes

4.3 Data Collection Techniques

Assessing tourist walkability requires a **multifaceted approach** that combines both technical analysis and user experiences. By employing a range of data collection techniques—such as surveys, GPS tracking, pedestrian counts, GIS mapping, and walkability audits—planners and policymakers can gain a **holistic understanding** of the walking environment from the tourist's perspective.

The integration of **subjective perceptions** (via surveys and interviews) with **objective spatial and behavioural data** (via mapping, audits, and tracking) ensures that walkability assessments are both **people-centred and evidence-based**. This approach helps identify not just infrastructure deficiencies but also experiential gaps that may affect tourist satisfaction.

Ultimately, improving walkability in tourist areas enhances **accessibility, safety, and comfort**, leading to a more engaging and sustainable tourist experience, and contributing positively to the **local economy and urban liveability**.

S.No.	Technique	Purpose	Data Collected	Tools / Methods
1	**Field Surveys / Questionnaires**	Understand tourists' perceptions and satisfaction	Comfort, safety, ease of navigation, attractiveness	Google Forms, printed surveys, mobile survey apps (e.g., Kobo Toolbox)
2	**GPS Tracking / Travel Diaries**	Track actual tourist walking routes and patterns	Routes, distance, time, stopping points	GPS loggers, fitness trackers, apps like Strava, Moves
3	**Pedestrian Counts**	Measure pedestrian traffic and popular paths	Number of pedestrians, peak hours, locations	Manual counters, tally sheets, video recording, AI pedestrian sensors
4	**GIS Mapping & Spatial Analysis**	Analyze walkability infrastructure and connectivity	Sidewalks, crossings, tourist spots, distances, barriers	ArcGIS, QGIS, Google Earth, OpenStreetMap
5	**Walkability Audits / Environment Assessment**	Assess physical conditions of walking infrastructure	Sidewalk condition, width, slope, lighting, amenities	PEDS, SWAT, WABSA, checklists, on-site observation

6	**Photographic Documentation**	Visual record of walking environments and issues	Photos of walkways, obstacles, signage, amenities	Digital camera, smartphone, video recordings
7	**Social Media & App Review Analysis**	Extract tourist feedback and sentiments from online platforms	Reviews on walkability, safety, convenience	TripAdvisor, Google Maps, NLP tools, review scraping
8	**Key Informant Interviews**	Gain expert and stakeholder insights	Infrastructure gaps, tourist behaviour, improvement suggestions	Interviews with planners, tourism officials, guides, locals
9	**Time-Distance Studies**	Assess actual time taken to walk between destinations	Time, distance, pedestrian delays	Stopwatch, mapping tools, field observations
10	**Participatory Mapping / Community Walks**	Engage tourists and locals in identifying walkable and problematic routes	User-drawn maps, identified safe/unsafe areas	Map Questionnaire, OpenStreetMap, printed base maps, field sketching

Table 13 – Technological Tools for Walkability (Source – Author)

Example - The case study assessed the walkability of Mall Road, Mussoorie—one of the most visited tourist spots in northern India. Using a mix of data collection techniques such as field surveys, GPS tracking, pedestrian counts, GIS mapping, and stakeholder interviews, the study evaluated both the physical infrastructure and the walking experience of tourists.

Key findings revealed issues like uneven sidewalks, steep gradients, lack of seating and signage, and overcrowding. Tourists reported challenges related to comfort, safety, and accessibility, particularly for the elderly and differently abled.

The study recommended improvements in infrastructure, accessibility, pedestrian zoning, and tourist amenities. Enhancing walkability on Mall Road can lead to greater tourist satisfaction, increased footfall, and more sustainable tourism in Mussoorie.

This case highlights the importance of a **comprehensive, user-centered approach** to assessing and improving walkability in tourist destinations

4.4 Types of Walkability Surveys

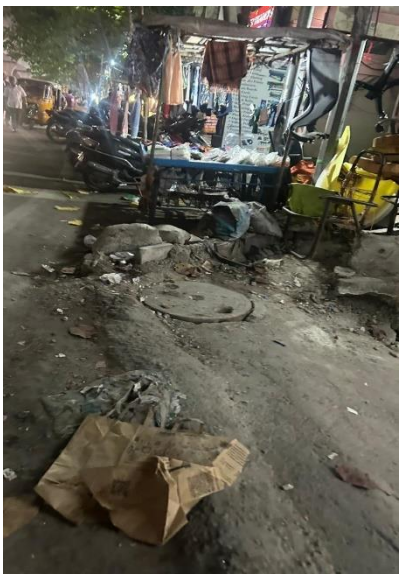
SR.NO.	Analysis	Purpose	Methods
1.	Descriptive Analysis	Summarize the data and identify patterns.	1. Frequency tables and graphs (e.g., pedestrian counts, preferred routes). 2. Percentage breakdowns (e.g., satisfaction levels, age group preferences). 3. Average scores for survey responses (e.g., safety ratings).
2.	Geographic Information System (GIS) Analysis	Spatially analyze walkability factors and visualize pedestrian networks.	1. Heat Maps: Identify high-traffic pedestrian zones and underutilized areas. 2. Buffer Analysis: Evaluate the accessibility of tourist attractions within walking distances. 3. Network Analysis: Assess the connectivity and shortest paths between key tourist destinations. 4. Overlay Analysis: Combine layers like footpath quality, amenities, and safety data.
3.	Behavioral Analysis	Understand tourist walking preferences and patterns.	1. Analyze GPS data or mapping applications for route preferences and time spent walking. 2. Study peak pedestrian hours and crowd movement trends. 3. Use time-motion studies to observe walking speed and stops at various points.
4.	Walkability Index Calculation	Measure the walkability of a given area using a composite index.	1. Sidewalk width and quality. 2. Pedestrian crossings and traffic safety. 3. Proximity to tourist attractions. 4. Presence of shade, greenery, and street furniture. Assign weights

			to indicators and calculate a score for each area or route.
5.	**Visual and Photographic Analysis**	**Assess qualitative aspects of the pedestrian environment.**	1. Evaluate street aesthetics, signage, and wayfinding elements. 2. Identify areas requiring maintenance or enhancement. 3. Use before-and-after comparisons to showcase improvement areas.
6.	**Statistical Analysis**	**Identify correlations and trends in the data.**	1. Correlation Analysis: Examine the relationship between walkability and tourist satisfaction. 2. Regression Analysis: Determine how factors like safety, amenities, or connectivity influence walkability scores. 3. ANOVA or T-tests: Compare walkability perceptions across different tourist groups (e.g., age, gender).
7.	**Accessibility Analysis**	**Evaluate ease of access for pedestrians, especially those with disabilities.**	1. Slope Analysis: Identify areas with steep gradients or barriers. 2. Pathway Continuity Assessment: Check for breaks in the pedestrian network. 3. Level of Service (LOS): Grade pathways based on factors like width, obstruction, and pedestrian comfort.

Table 14 – types of Walkability surveys (Source – Author)

4.5 Field observations

Site visit inferences



Tourist and Local Movement

The area is a mix of tourists and local shoppers visiting Laal Bazaar and surrounding markets, leading to high footfall.
Hawkers and street vendors occupy significant space, sometimes forcing pedestrians onto the road.

Public Transport and Connectivity

Availability of buses, auto-rickshaws, and metro connectivity enhances accessibility, but last-mile connectivity for pedestrians still needs improvement.
Proposed skywalks or better integration with public transport hubs could enhance ease of movement.

The **walkability** between **Charminar and Chowmahalla Palace**, a key heritage corridor in Hyderabad, is crucial for both tourists and locals. The route is approximately **600 meters (7–10 minutes on foot) Existing Pedestrian Infrastructure Footpaths**: Present but often encroached by vendors and parked vehicles. **Pedestrian Crossings**: Limited, making it difficult to cross roads safely. **Street Width**: Narrow streets with a mix of pedestrian and vehicular traffic.

Traffic & Congestion

Heavy **vehicular movement** around Laad Bazaar and near Chowmahalla Palace.
Auto-rickshaws, private vehicles, and vendors reduce pedestrian space.
Lack of **dedicated pedestrian signals** at intersections.

Land Use & Activity Nodes
High tourist footfall near Charminar and Chowmahalla Palace.
Commercial activity (Laad Bazaar, shops, food stalls) influences movement.
Religious sites (Mecca Masjid) add to pedestrian volume.

Steep slopes with limited pedestrian-friendly pathways.
Staircases & ramps exist but need better integration with public routes.
Pedestrian Infrastructure
Footpaths are available along key approach roads (**Birla Mandir Road & Nampally Road**) but are often narrow.
Lack of pedestrian-only pathways from major transit points.
Crossing difficulty due to fast-moving traffic near Lakdi-ka-Pul & Hussain Sagar Road.
Traffic & Connectivity
Major roads nearby: Lakdi-ka-Pul, Nampally Road, Tank Bund Road.
High vehicular congestion, especially on weekends & festival days.
Public transport nodes (bus stops, metro stations) exist, but last-mile pedestrian connectivity is weak.
Tourist & Devotee Movement
High footfall, especially during evenings and religious events.
No **clear wayfinding signage** for first-time visitors.
Hawkers and informal stalls obstruct pedestrian flow near entry points.

Pedestrian Infrastructure

Footpaths: Present but narrow and obstructed in some sections.
Crosswalks: Few marked pedestrian crossings, making road crossings unsafe.
Encroachments: Vendors, parked vehicles, and shop extensions reduce pedestrian space.

Road & Traffic Conditions

Busy roads nearby: Chikkadpally Main Road, RTC Cross Road, and Bagh Lingampally Road.

High vehicular congestion, especially during peak hours.
Pedestrian-vehicle conflicts at intersections and bus stops.

Public Transport & Last-Mile Connectivity

Metro, buses, autos available, but lack of designated pedestrian zones.
Auto & e-rickshaw stands often block walkways near the metro exit.
Wayfinding issues: No clear signage guiding pedestrians toward the temple.

Safety & Comfort

Inadequate street lighting, making night walks unsafe.
No shaded pathways, making walking uncomfortable in hot weather.
No resting spots, affecting elderly devotees.

4.6 Analysis of Accessibility & Footfall Analysis

4.6.1 Temples

The map shows most accessible temples via public transport: Birla Mandir, ISKCON, Ujjaini Mahankali, Peddamma, Chikkadpally, and Hanuman Koti.High weekend footfall: Chilkur Balaji and Peddamma Temple. Remote access (requiring private transport): Sanghi Temple and Keesaragutta.Ideal for tourists: Birla Mandir, ISKCON, Peddamma, and Jagannath Temple. The map represents the spatial distribution of major temples in Hyderabad in relation to the city's metro rail network. Temples are marked with red icons and accompanied by red concentric buffer zones of 200, 400, 600, 800, and 1000 meters, indicating varying levels of walkable access.

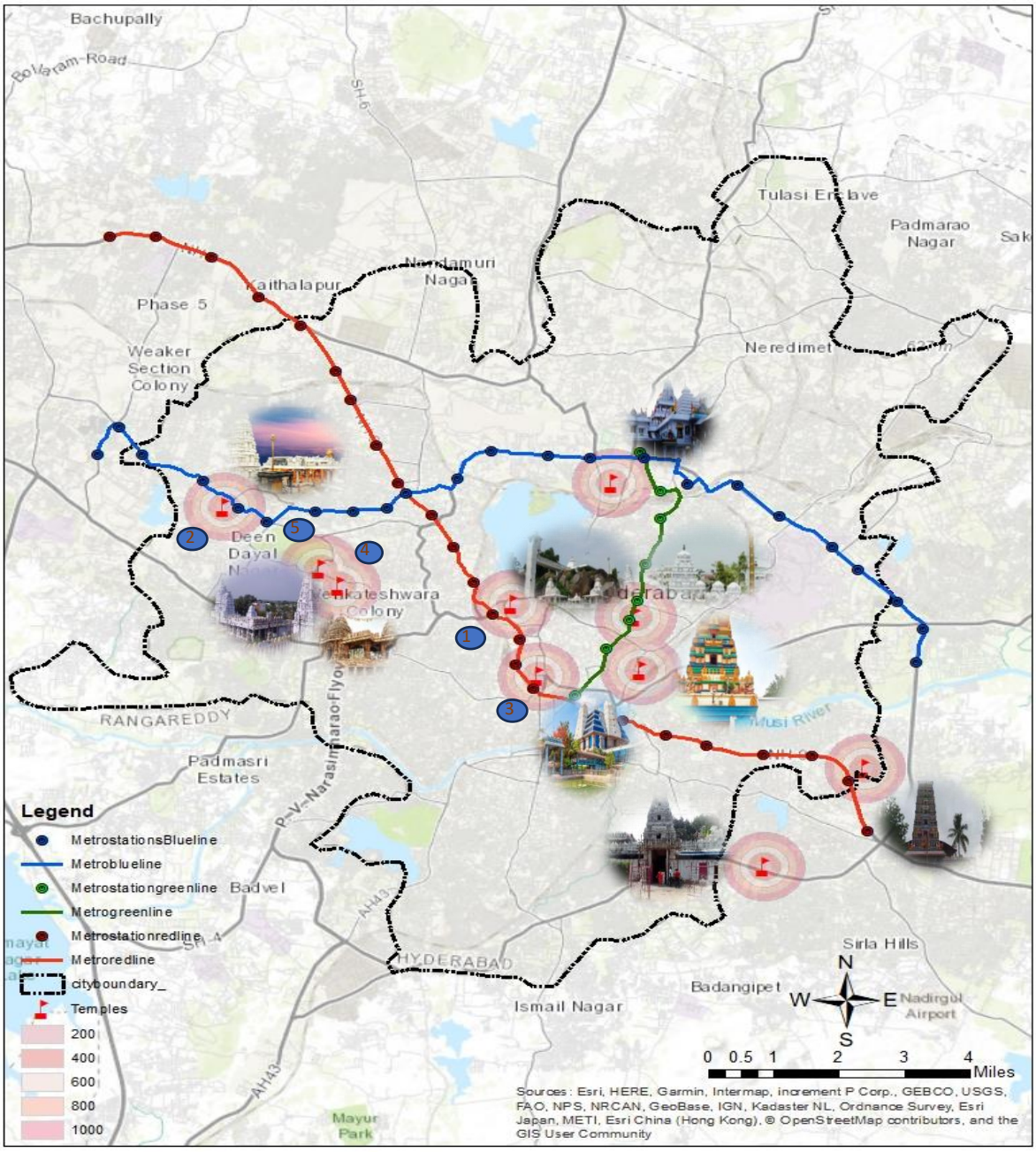


Figure 22 – Hyderabad Temple map (Source – Author)

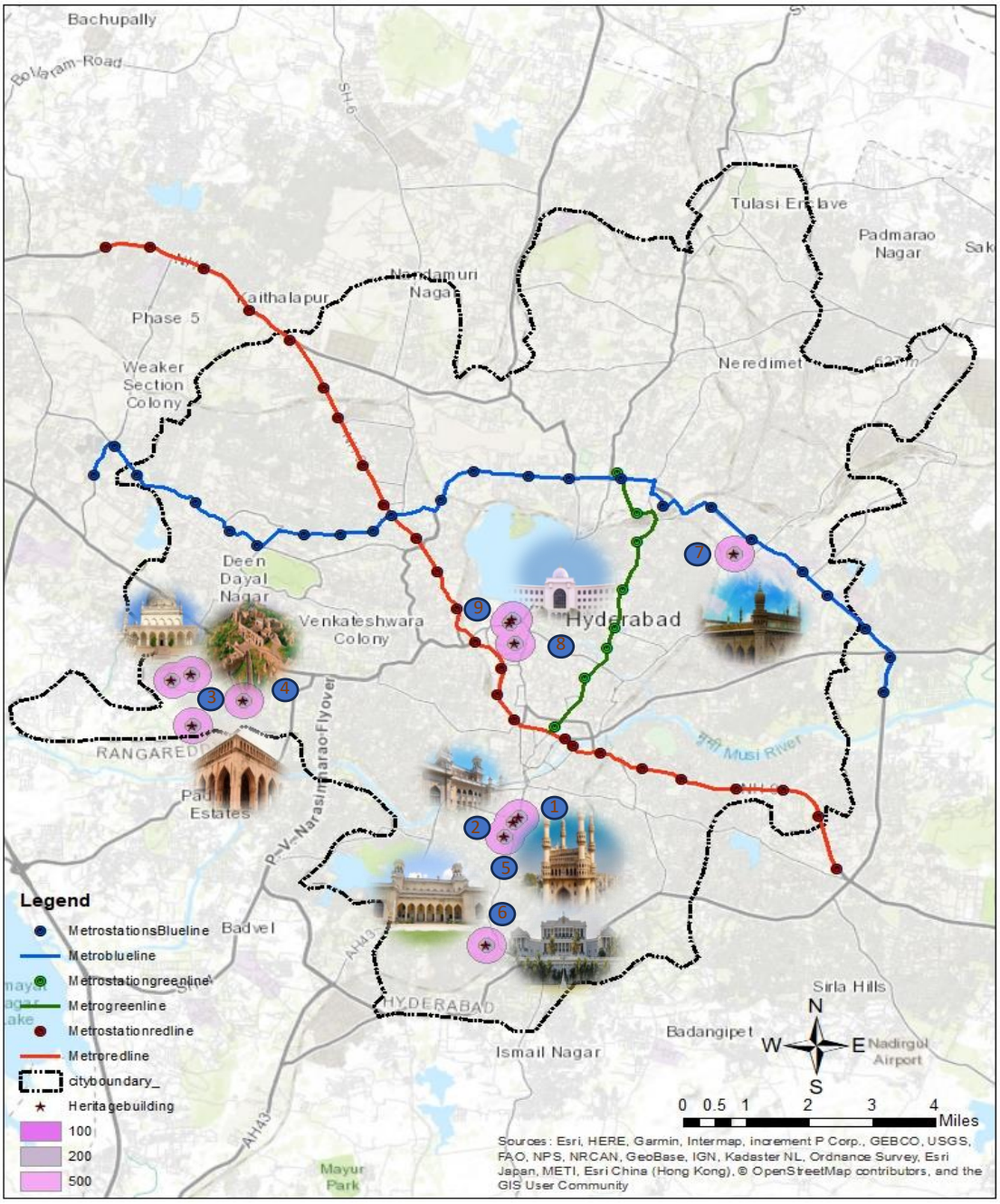
The table presents a comparative analysis of **nine major temples in Hyderabad**, focusing on their **accessibility, daily footfall, proximity to transit options**, and whether they are **walkable from public transportation**. Here's a breakdown of the insights from the data:

Temple Name	Pick Time (Best Visiting Hours)	Avg. Footfall (Daily)	Bus Stop (Distance)	Railway Station (Distance)	Metro Station (Distance)	Airport (Distance)	Walkable From Transit
1. Birla Mandir	9 AM – 12 PM, 5 PM –8 PM	5,000–7,000	Lakdikapul (0.5 km)	Nampally (1.5 km)	Lakdikapul (0.5 km)	RGIA (30 km)	10min
2. Chilkur Balaji	6 AM –1 PM, 4 PM – 8 PM	10,000 (weekends)	Chilkur (0.8 km)	Hyderabad Deccan (27 km)	Raidurg (22 km)	Raidurg (22 km)	---------
3. ISKCON Temple, Abids	6:30 AM – 1 PM, 4 PM – 8:30 PM	3,000 – 4,000	Abids (200 m)	Nampally (1.2 km)	Gandhi Bhavan (1.0 km)	RGIA (33 km)	15min
4. Jagannath Temple	6 AM – 11 AM, 5 PM – 9 PM	2,000–3,000	Banjara Hills (0.3 km)	Begumpet (6 km)	Road No 5 Jubilee Hills (3.5 km)	RGIA (35 km)	30min
5. Sanghi Temple	6 AM – 1 PM, 4 PM –8 PM	3,000–4,000	Sanghi Nagar (2 km)	Secunderabad (35 km)	LB Nagar (24 km)	RGIA (41 km)	--------
6.Keesaragutta Temple	6 AM – 12 PM, 4 PM – 8 PM	1,500–2,500	Keesara Bus Stop (3 km)	Secunderabad (35 km)	Nagole (24 km)	RGIA (55 km)	-------
7.Peddamma Temple	6 AM – 12 PM, 5 PM – 8:30 PM	5,000–6,000	Madhapur (0.4 km)	Begumpet (8 km)	Peddamma Gudi (0.1 km)	RGIA (36 km)	5min
8.Chikkadpally Balaji Temple	6 AM – 12 PM, 5 PM – 9 PM	1,500 – 2,000	Chikkadpally (100 m)	Kacheguda (2.5 km)	RTC X Roads (400 m)	RGIA (34 km)	7min
9.Hanuman Koti Temple, Koti	6 AM – 11 AM, PM – 9 PM	1,500 – 2,000	Koti (100 m)	Nampally (2 km)	Sultan Bazaar (400 m)	RGIA (32 km)	7min

Table 15 – Temple Accessibility Analysis\ (Source – Author)

4.6.2 Heritage Buildings

The map shows Metro connectivity is available for some sites like Moazzam Jahi, State Central Library, and Purani Haveli, while others such as Charminar and Chowmahalla Palace lack nearby metro access. Railway connectivity varies, with some sites like Falaknuma Palace and Moazzam Jahi being within 1 kilometer, while others like Golconda Fort are located much farther. Overall, the map helps assess which heritage sites are both popular and conveniently accessible by public transport, serving as a useful resource for tourists, urban planners, and heritage managers alike.



The table provides a comprehensive overview of nine prominent heritage buildings in Hyderabad, focusing on their tourist appeal and accessibility. It highlights the best visiting hours and average daily footfall, offering insight into the popularity of each site. Charminar,

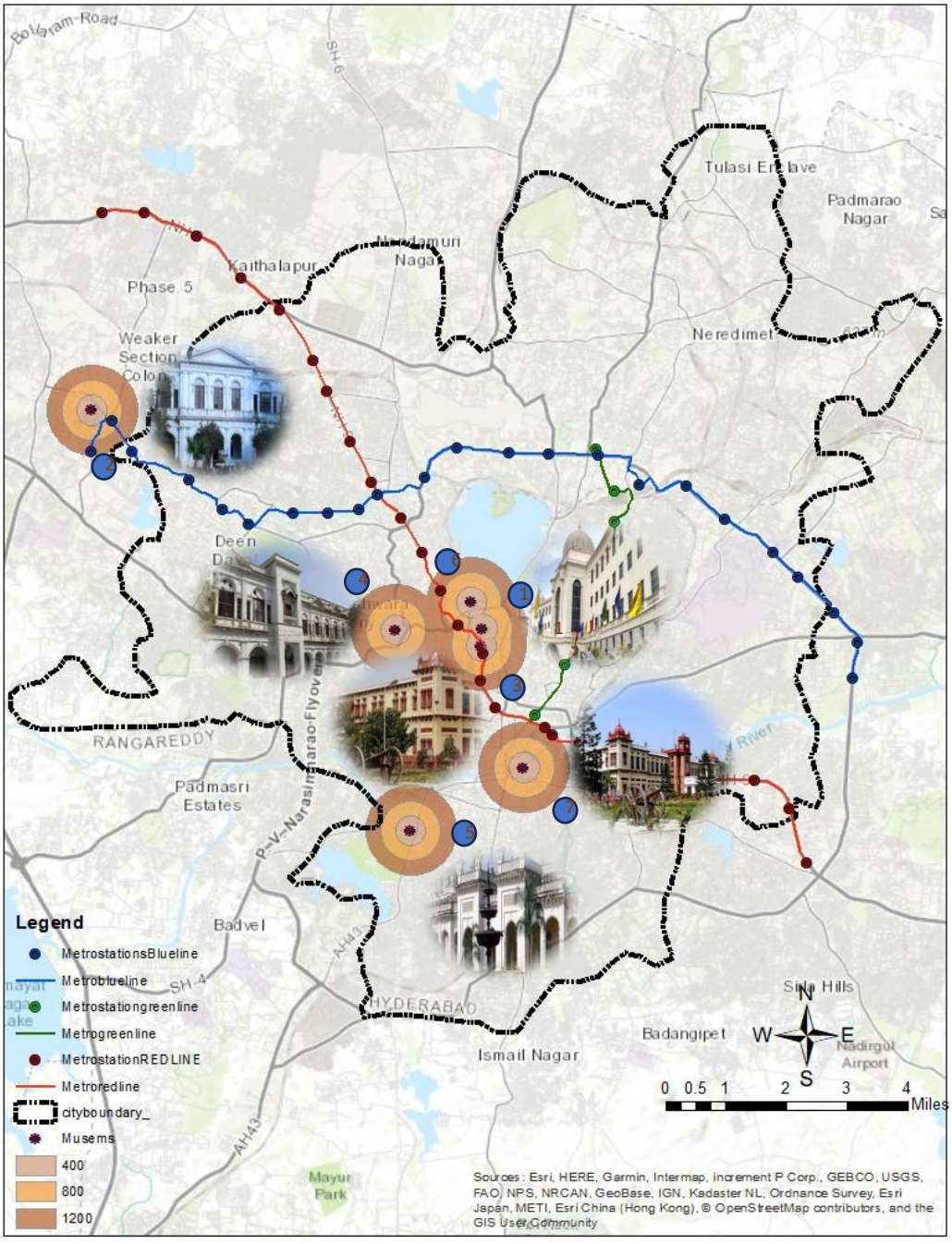
Mecca Masjid, and Golconda Fort emerge as the most visited heritage spots, attracting thousands of tourists daily. In terms of transit accessibility, the table details the distance of each site from the nearest bus stop, railway station, metro station, and the Rajiv Gandhi International Airport (RGIA). Most heritage buildings are well-connected by bus, with many located within 100–300 meters of a bus stop, making them easily walkable.

Heritage building Name	Pick Time (Best Visiting Hours)	Avg. Footfall (Daily)	Bus Stop (Distance)	Railway Station (Distance)	Metro Station (Distance)	Airport (Distance)	Walkable From Transit
1. Charminar	9 AM – 5:30 PM	10,000+ (esp. weekends)	Charminar Bus Stop (100 m)	Hyderabad Deccan (5.5 km)	----	RGIA (26 km)	---------
2.Chowmahalla Palace	10 AM – 5 PM (Closed Fri)	3,000–5,000	Charminar Bus Stop (300 m))	Hyderabad Deccan (5.8 km)	----	Raidurg (26.5 km)	---------
3. Golconda Fort	9 AM – 5:30 PM	5,000–7,000	Golconda Fort (200 m)	Nampally (11 km)	Raidurg (7.5 km)	RGIA (30 km)	1hr
4. Qutb Shahi Tombs	9:30 AM – 5:30 PM	2,000–3,000	Seven Tombs Bus Stop (300 m))	Nampally (10 km)	Raidurg (5.5 km	RGIA (29 km)	40min
5. Purani Haveli	10:30 AM – 5 PM	1,000–1,500	Purani Haveli Bus Stop (100 m)	Nampally (5 km	MGBS Metro (1.5 km)	RGIA (27 km)	15min
6. Falaknuma Palace	Restricted (Taj Tour)	Tourists only (booking)	Falaknuma Bus Stop (0.8 km)	Falaknuma (1 km)	MGBS Metro (9 km	RGIA 24km)	1hr
7. Mecca Masjid	4 AM – 9:30 PM	5,000–8,000 (Fridays)	Charminar Bus Stop (100 m)	Hyderabad Deccan (5.5 km)	----	RGIA (26 km)	------
8. State Central Library	9 AM – 5 PM	1,500 – 2,000	Afzalgunj (100 m))	Kacheguda (3.5 km)	MGBS Metro (0.7 km)	RGIA (26 km)	10min

Table 16 – Heritage Building Accessibility Analysis (Source – Author)

4.6.3 Museums

The map presents a thematic representation of the distribution of major museums in Hyderabad in relation to the city's metro rail network. Museums are depicted with images and surrounded by buffer zones of 400, 800, and 1200 meters, indicating their walkable accessibility.. The central part of Hyderabad shows a higher concentration of museums, reflecting the city's rich cultural and historical heritage. City boundaries and notable localities are outlined to provide spatial context. Overall, the map highlights the strong potential for integrating public transportation with cultural tourism by improving accessibility to museums through the metro system.



Figu

The chart represents a comparative overview of **seven major museums in Hyderabad**, analyzing their **visitor traffic, operational hours, and accessibility through public transportation**. Each museum is evaluated based on its **average daily footfall**, **distance from the nearest bus stop, railway station, metro station**, and **Rajiv Gandhi International Airport (RGIA)**. It also indicates whether the museum is **walkable from nearby transit points**.

Museum Name	Pick Time (Best Visiting Hours)	Avg. Footfall (Daily)	Bus Stop (Distance)	Railway Station (Distance)	Metro Station (Distance)	Airport (Distance)	Walkable From Transit
1. Salar Jung Museum	10 AM – 5 PM (Closed Friday)	5,000 Daily	Afzalgunj (200 m)	Kacheguda (3.5 km)	MGBS (0.8 km)	RGIA (26 km)	5min
2.Telangana State Archaeology Museum	10 AM – 5 PM	1,000–1,500	Public Gardens (100 m)	Nampally (500 m)	Nampally Metro (300 m)	RGIA (30 km)	3min
3.Birla Science Museum & Planetarium	10:30 AM – 8 PM	2,000–3,000	Birla Mandir (300 m)	Nampally (11 km)	Lakdikapul Metro (0.6 km)	RGIA (30 km)	5min
4. Sudha Car Museum	9:30 AM – 6:30 PM	1,500	Bahadurpura X Roads (300 m))	Hyderabad Deccan (6 km)	MGBS Metro (4.5 km)	RGIA (25 km)	30min
5. City Museum (Purani Haveli)	10:30 AM – 5 PM	1,000	Purani Haveli (150 m)	Nampally (5 km)	MGBS Metro (1.5 km)	RGIA (27 km)	15min
6. Rail Museum (Kacheguda)	10 AM – 5 PM	800–1,000	Kachegud a (100 m)	Kacheguda (0.1 km)	Narayangu da Metro (1.4 km)	RGIA 30 km)	15min

Table 17 – Museum Accessibility Analysis (Source – Author)

4.6.4 Gardens & Parks

The map illustrates the spatial distribution of major parks in Hyderabad and their proximity to the metro rail network. Parks are highlighted with green icons and surrounded by concentric green buffer zones of 500, 1000, and 1500 meters, representing varying levels of walkable access. The metro rail network is clearly marked with the Blue, Green, and Red lines, each with their respective stations. The central and southern parts of the city show a higher concentration of parks, suggesting a focus on urban green spaces in these areas. Images of prominent parks are overlaid to visually represent key locations.

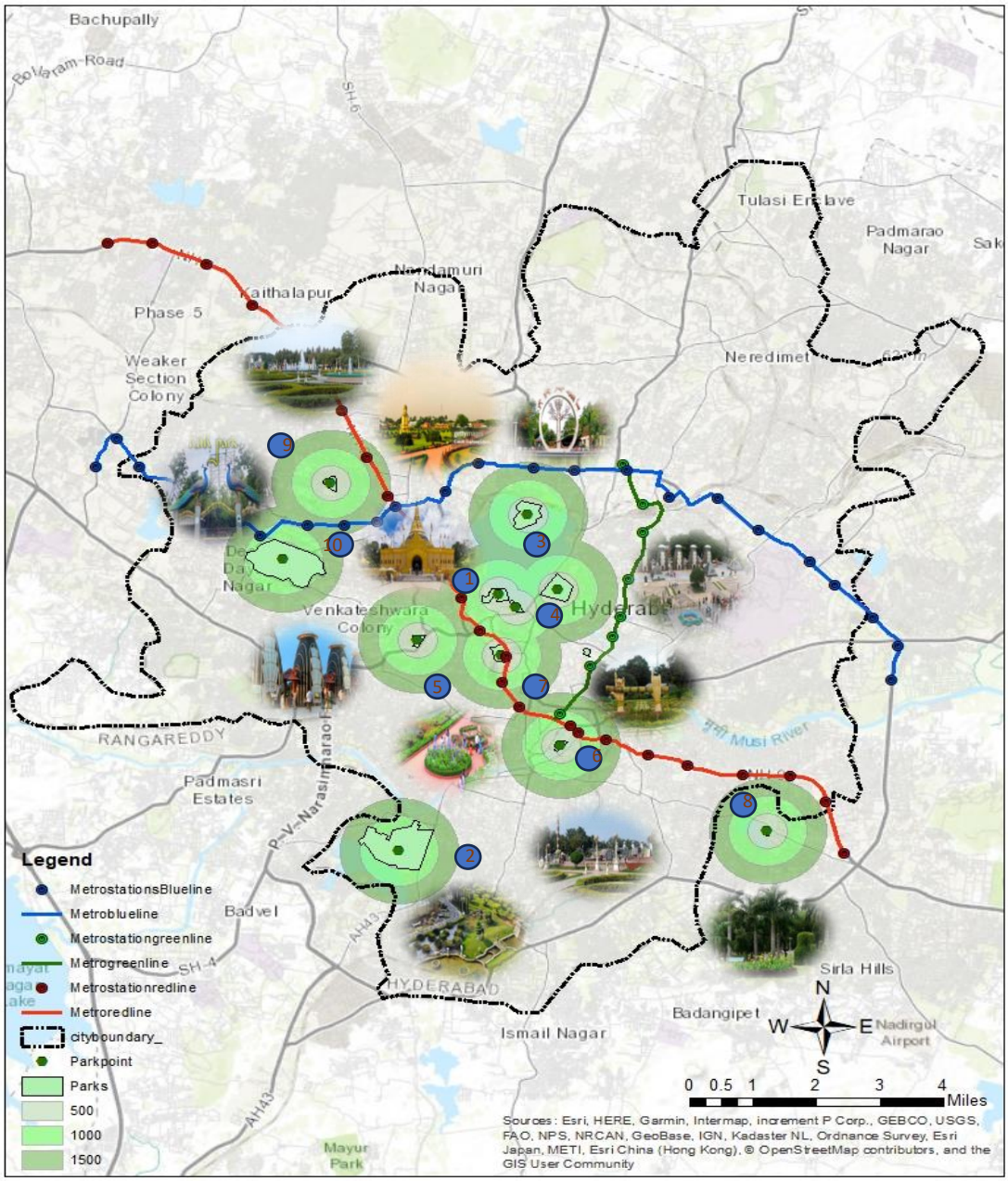


Figure 25 – Hyderabad Parks map (Source – Author)

The chart represents a comparative overview of **nine major gardens and parks in Hyderabad**, analyzing their **visitor numbers, best visiting hours, and connectivity to public transport systems**. Each park is assessed based on daily average footfall, proximity to the nearest **bus stop, railway station, metro station, and the Rajiv Gandhi International Airport (RGIA)**, and whether it is **walkable from public transit points**.

Garden/Park Name	Pick Time (Best Visiting Hours)	Avg. Footfall (Daily)	Bus Stop (Distance)	Railway Station (Distance)	Metro Station (Distance)	Airport (Distance)	Walkable From Transit
1. Lumbini Park	9 AM – 9 PM	6,000–8,000	Lumbini Park (100 m)	Hyderabad Deccan (5.5 km)	Lakdikapul (0.7 km)	RGIA (30 km)	10min
2. NTR Gardens	9 AM – 9 PM	5,000–7,000	NTR Gardens (100 m)	Nampally (3 km)	Lakdikapul (1 km)	Raidurg (30 km)	10min
3. Kasu Brahmananda Reddy (KBR) Park	6 AM – 6 PM	3,000–4,000	Jubilee Hills Checkpost (300 m)	Begumpet (6.5 km)	Jubilee Hills Metro (1.5 km)	RGIA (34 km)	15min
4. Indira Park	10 AM – 9 PM	5,000–7,000	Indira Park (200 m)	Kacheguda (3 km)	RTC X Roads (1.2 km)	RGIA (30 km)	15min
5. Botanical Garden (Kondapur)	5:30 AM – 6 PM	2,000–3,000	Kondapur (500 m)	Lingampally (6.5 km)	HITEC City Metro (2.5 km)	RGIA (36 km)	25min
6. Sanjeevaiah Park	9 AM – 5 PM	3,000–4,000	Public Gardens (100 m)	Secunderabad (2.5 km)	Necklace Road Metro (100 m)	RGIA 33 km)	5min
7. Public Gardens (Bagh-e-Aam)	9 AM – 6 PM	3,000–4,000	Public Gardens (100 m)	Nampally (100 m)	Nampally Metro (100 m)	RGIA (30 km)	5min
8. Mahavir Harina Vanasthali National Park	9 AM – 5:30 PM	1,000–2,000	Vanasthalipuram (1.2 km)	Malakpet (10 km)	LB Nagar Metro (4 km	RGIA (24 km)	25min
9. Mrugavani National Park	9 AM – 5 PM	1,000–1,500	Chilkur Road (1 km)	Nampally (22 km)	Raidurg Metro (16 km)	RGIA (23 km)	-------

Table 18 – Parks & Gardens Accessibility Analysis (Source – Author)

4.6.5 Shopping Streets & Markets

The map displays the spatial distribution of shopping markets in Hyderabad in relation to the city's metro rail network. Shopping markets are marked with dark pink areas and are surrounded by multi-ring buffer zones of 500, 1000, and 1500 meters, illustrating walkable access ranges. The metro rail system is represented by three lines—Blue, Green, and Red—each with its respective metro stations, showing the integration of public transport with commercial activity hubs.

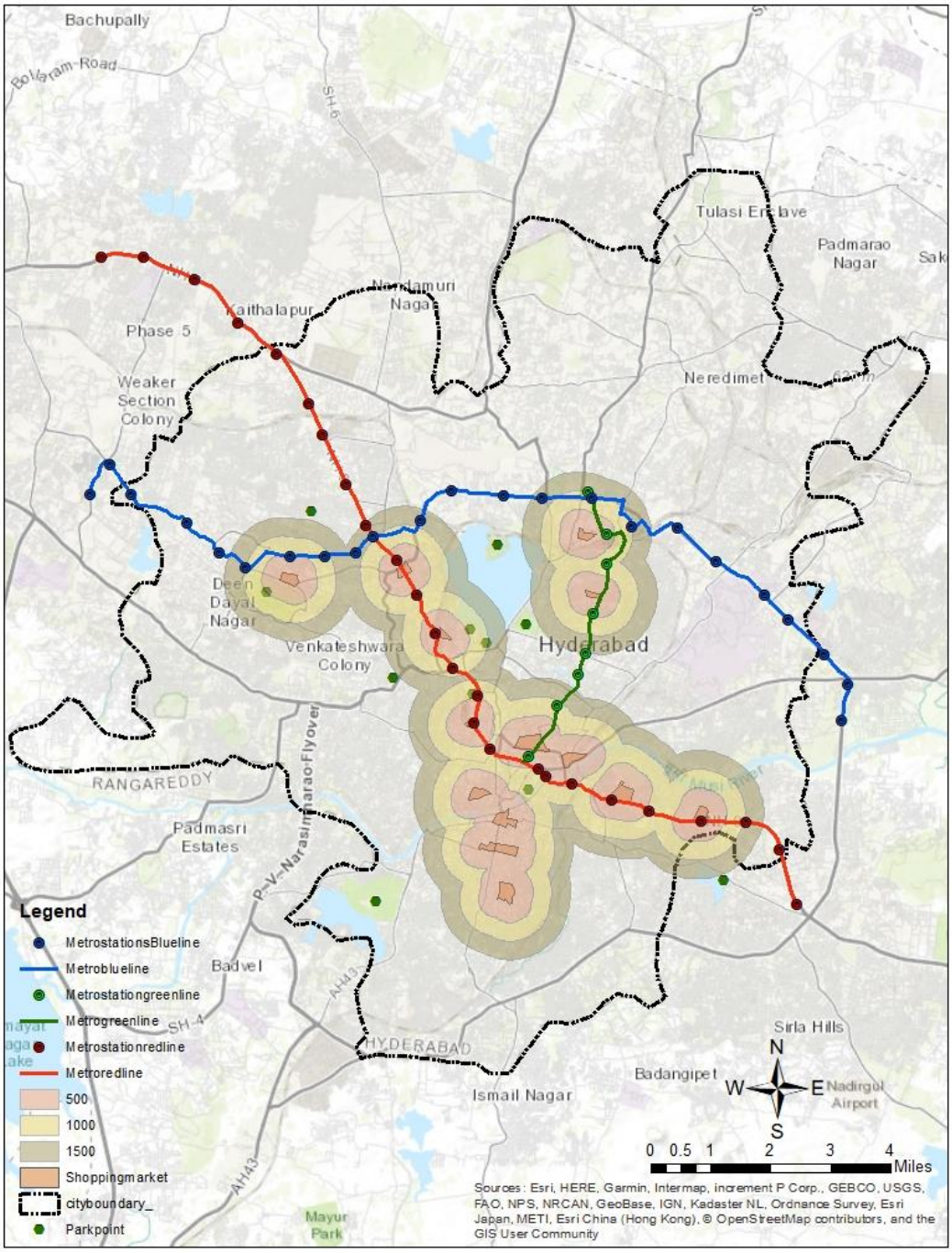


Figure 26 – Hyderabad Shopping streets map (Source – Author)

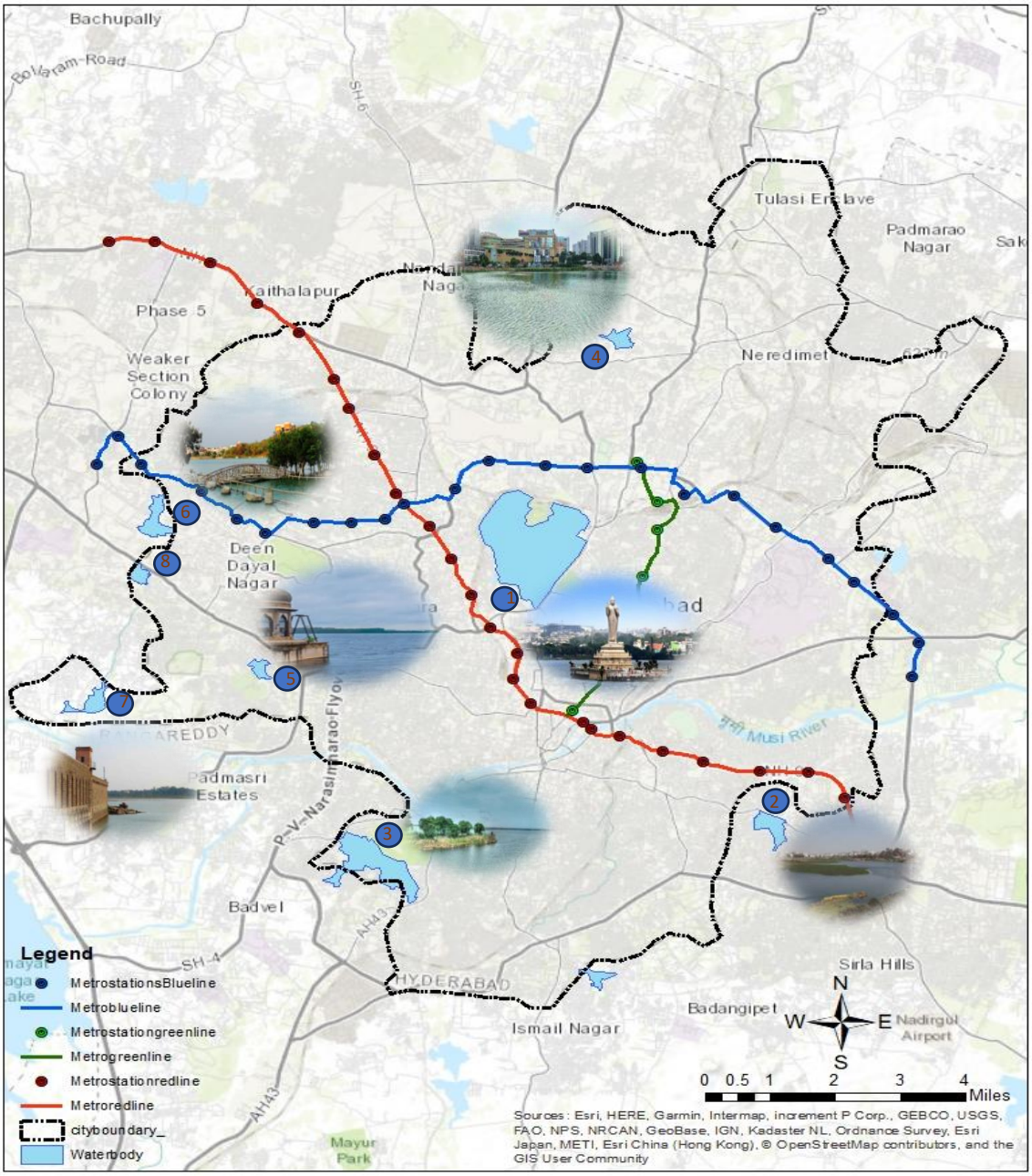
The chart provides a comparative overview of **major shopping markets in Hyderabad**, focusing on their **visitor trends, operational hours, and accessibility through public transit**. Each of the nine listed markets is evaluated on the basis of daily footfall, distance from the nearest bus stop, railway station, metro station, and Rajiv Gandhi International Airport (RGIA), as well as whether the location is walkable from public transit.

Shopping Markets Name	Pick Time (Best Visiting Hours)	Avg. Footfall (Daily)	Bus Stop (Distance)	Railway Station (Distance)	Metro Station (Distance)	Airport (Distance)	Walkable From Transit
1. Laad Bazaar (Charminar)	11 AM – 10 PM	15,000–20,000	Charminar Bus Stop (100 m)	Hyderabad Deccan (5.5 km)	----	RGIA (26 km)	------
2. Sultan Bazaar (Koti)	10 AM – 9 PM	8,000–10,000	Koti (100 m)	Nampally (2.5 km)	Sultan Bazaar Metro (100 m)	Raidurg (30 km)	5min
3. Begum Bazaar	10 AM – 9 PM	12,000–15,000	Afzalgunj (300 m	Hyderabad Deccan (3 km)	MGBS Metro (0.9 km)	RGIA (29 km)	7min
4. Moazzam Jahi Market	10 AM – 9 PM	5,000–7,000	MJ Market (50 m)	Nampally (10 km)	Raidurg (5.5 km	RGIA (30 km)	30min
5.Shahran Market	11 AM – 10 PM	7,000–10,000	Charminar (200 m)	Hyderabad Deccan (6 km)	----	RGIA (27 km)	------
6. Koti Book Market	10 AM – 8 PM	6,000–8,000	Koti (100 m)	Kacheguda (3.5 km)	Sultan Bazaar Metro (100 m)	RGIA 30 km)	5min
7. Abids Street Market	10 AM – 9 PM	6,000–9,000	Abids (100 m)	Nampally (1.2 km)	Gandhi Bhavan Metro (0.6 km)	RGIA (26 km)	8min
8. Monda Market	7 AM – 7 PM	4,000–6,000	Monda Market (100 m)	Secunderabad Jn (0.8 km)	Parade Ground Metro (500 m)	RGIA (35 km)	5min
9.Shilparamam (HiTech City)	10:30 AM – 8 PM	3,000–5,000 (tourist crowd)	HiTech City (800 m)	Lingampally (7 km)	Raidurg Metro (1.2 km)	RGIA (36 km)	15min

Table 19 – Shopping streets Accessibility Analysis (Source – Author)

4.6.6 Lakes

The map illustrates the distribution of major water bodies in Hyderabad in relation to the city's metro rail network. Various lakes and reservoirs are marked in blue, and prominent ones are highlighted with actual images for visual identification. The metro rail system is shown with the Blue, Green, and Red lines, along with their respective stations, offering a clear picture of public transportation accessibility to these water bodies. Many of the major lakes, such as Hussain Sagar, Durgam Cheruvu, and Shamirpet Lake, are situated along or near metro lines, particularly the Blue and Red corridors.



The chart represents a **comparative analysis of major lakes in Hyderabad**, focusing on their **visitor footfall, public transit accessibility, and connectivity with key transportation nodes** such as bus stops, railway stations, metro stations, and the Rajiv Gandhi International Airport (RGIA).

Lakes Name	Pick Time (Best Visiting Hours)	Avg. Footfall (Daily)	Bus Stop (Distance)	Railway Station (Distance)	Metro Station (Distance)	Airport (Distance)	Walkable From Transit
Hussain Sagar Lake	5AM – 9 PM	10,000+ (esp. evenings)	Lumbini Park (200 m)	Nampally (3 km)	Lakdikapul (1.2 km), Necklace Rd (0.8 km)	30 km	15min
Fox Sagar Lake (Jeedimetla)	6 AM – 6 PM	500–800	Jeedimetla (1.5 km)	Secunderabad (13 km)	JBS Metro (12 km)	RGIA (40 km)	------
Mir Alam	7 AM – 6 PM	2,000 (zoo visitors)	Nehru Zoological Park (200 m)	Nampally (7 km)	MGBS Metro (6.5 km)	RGIA (24 km)	30min
Himayat Sagar Lake	6 AM – 6 PM	1,500–2,000	Gandipet (1 km)	Hyderabad Deccan (18 km)	Raidurg Metro (12 km)	RGIA (27 km)	-------
Shamirpet Lake	6 AM – 6 PM	500–1,000 (weekends)	Shamirpet (1.5 km)	Secunderabad (24 km)	Nearest Metro: Parade Ground (22 km)	RGIA (43 km)	--------
Ameenpur Lake	6 AM – 6 PM	500–1,000 (birdwatchers)	Ameenpur (1.5 km)	Lingampally (8 km)	Miyapur Metro (5 km)	RGIA (38 km)	--------
Durgam Cheruvu Lake	6 AM – 9 PM	3,000–5,000	Jubilee Hills (800 m)	Durgam Cheruvu Metro (100 m)	Lingampally (7.5 km)	RGIA (26 km)	5min

Table 20 – Lakes Accessibility Analysis (Source – Author)

4.7 Tourist Circuits Maps , Heat , NDVI map

The map represents a transit accessibility analysis of the Hyderabad Metro Rail system, showcasing how well different areas of the city are served by the metro network. It highlights the three main metro lines—Red, Blue, and Green—each marked with coloured lines and dots indicating station locations. Surrounding many of these stations are concentric coloured circles, which likely represent walkable catchment zones (such as 500 meters or 1 kilometre), illustrating how far people can travel on foot to access metro services. These zones help visualize the level of accessibility provided by each station and identify which areas are well-connected versus those that may be underserved.

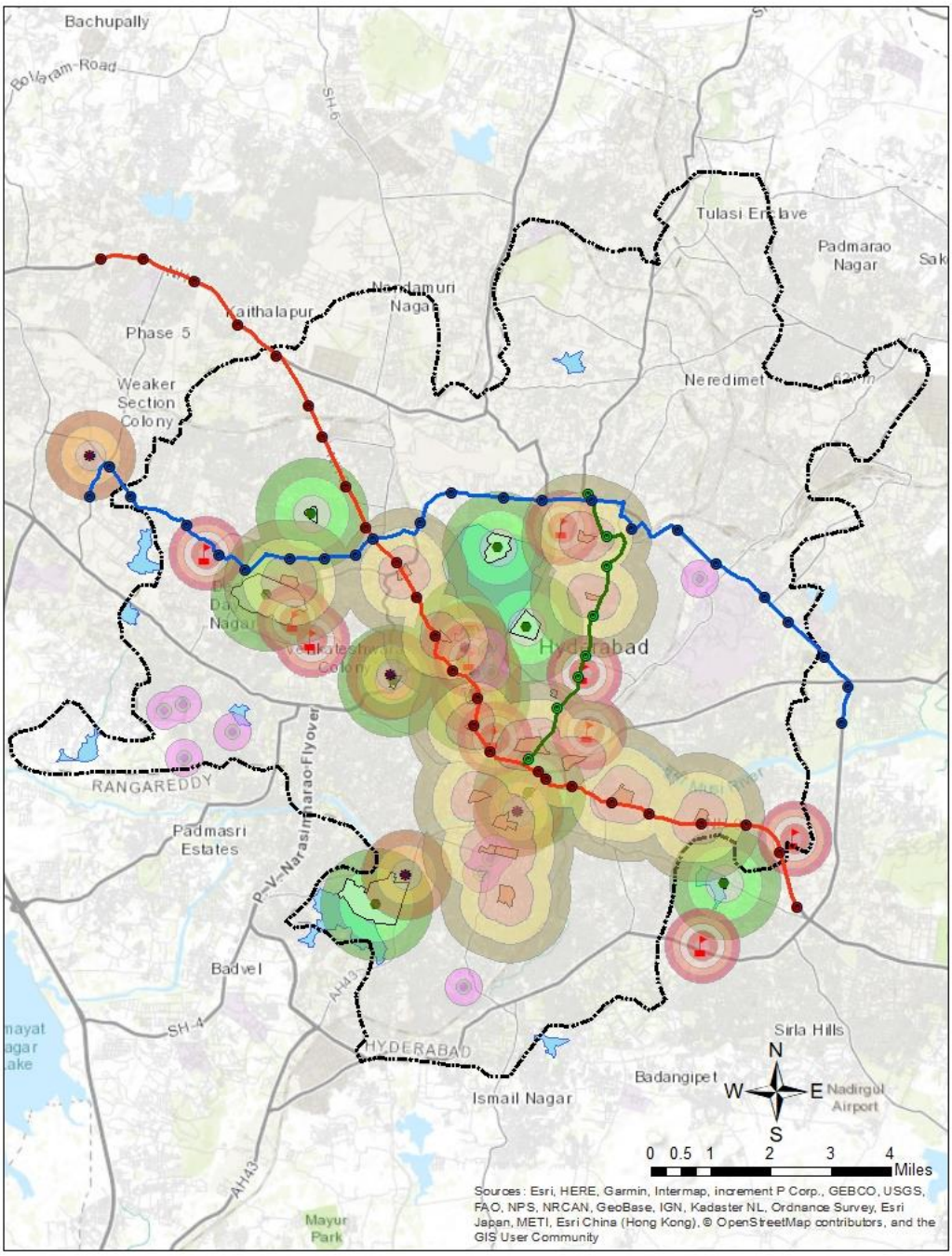


Figure 28 – Hyderabad Tourist places (Source – Author)

This map illustrates the integration of Hyderabad's metro rail network with the city's major tourist circuits, highlighting the accessibility of key attractions via public transit. In addition to the metro routes, a dark blue line represents the tourist circuit, connecting various important tourist destinations across the city. Around these destinations, large concentric purple circles indicate buffer zones ranging from 500 to 3000 meters, showing the walkable distance from tourist spots to the nearest metro stations. These buffers help assess how easily tourists can access these locations using the metro system. The map also includes administrative boundaries, road networks, and natural features to provide geographic context.

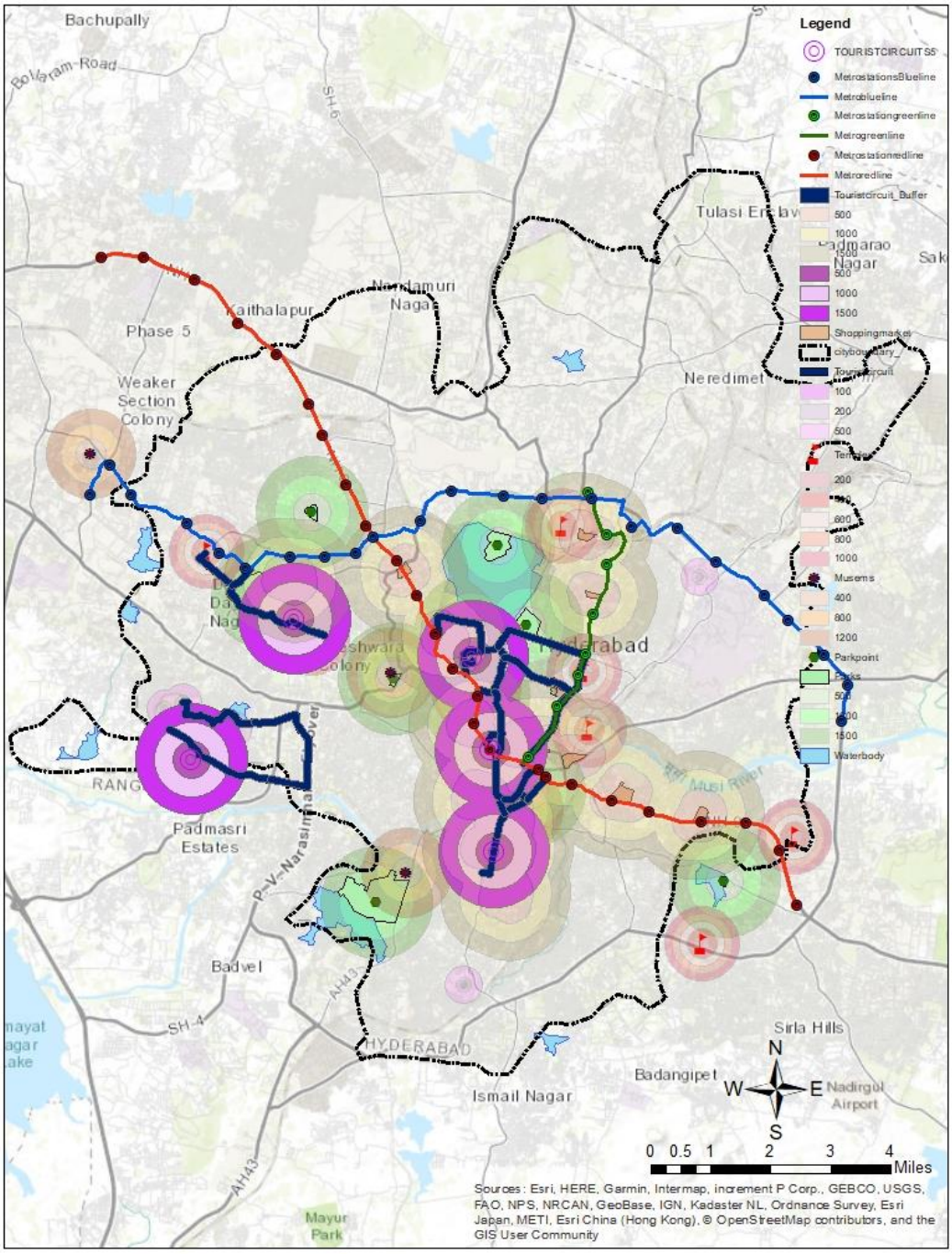


Figure 29 – Hyderabad Tourist Circuits (Source – Author)

The maps provide a spatial analysis of urbanization and vegetation cover in a region, likely Hyderabad, using two key indices: the Settlement Index (SI) and the Normalized Difference Vegetation Index (NDVI). The map on the left illustrates the Final Settlement Index, which reflects the density of built-up areas. It uses a color gradient from green to pink, where green indicates sparsely built or open areas, and pink denotes densely urbanized regions. This helps in identifying patterns of urban sprawl and varying levels of settlement concentration across the city.

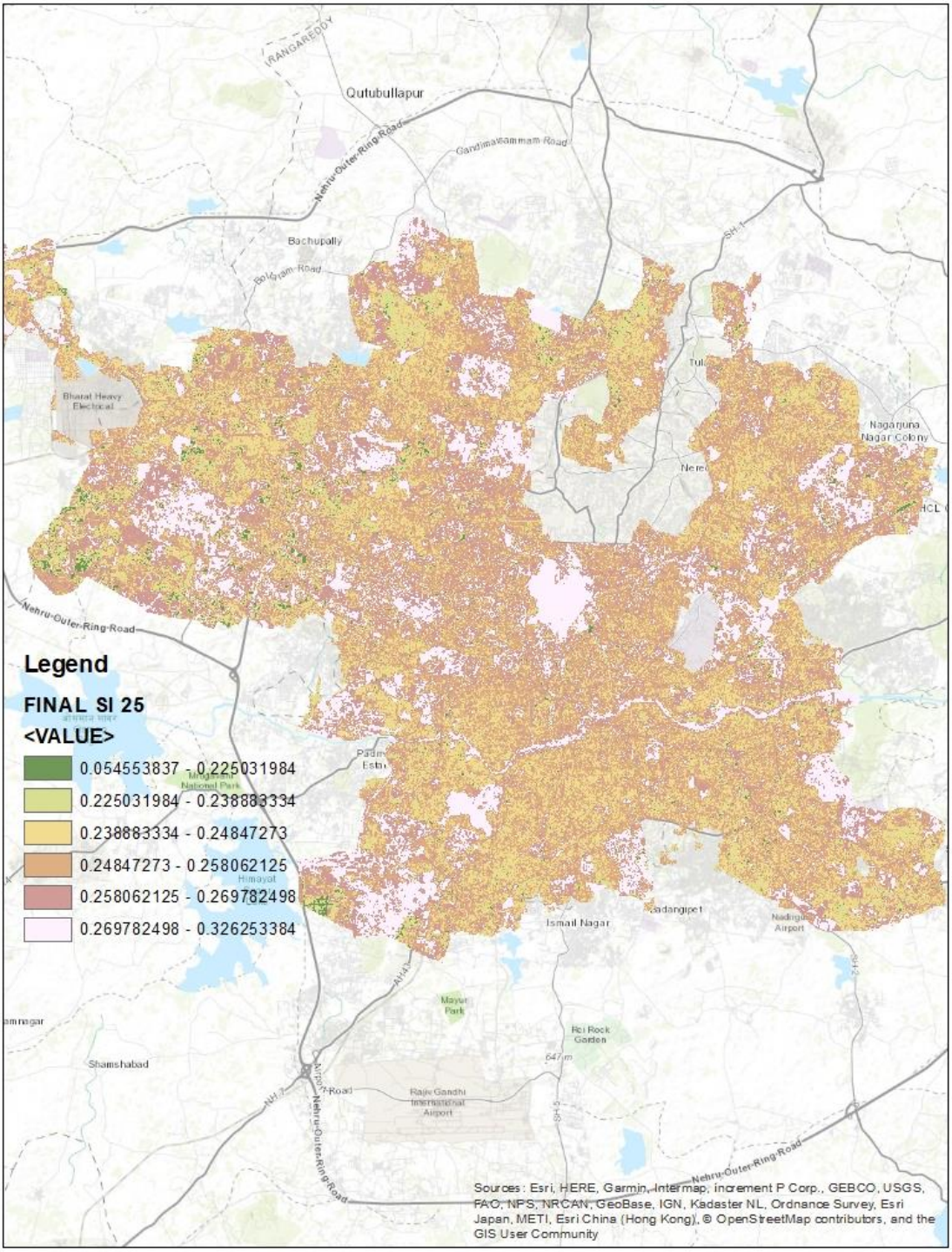


Figure 30 – Hyderabad Shadow Index (Source – Author)

The map on the right presents the Final NDVI, a measure of vegetation health and density. It ranges from red, indicating very low or no vegetation, to dark green, showing areas with rich vegetation such as parks or forested zones. This map is crucial for assessing the ecological condition of the city and tracking vegetation loss or preservation. Together, these maps offer valuable insights for urban planners and environmental managers to monitor urban growth, evaluate its impact on green spaces, and promote sustainable development strategies that balance infrastructure expansion with environmental conservation.

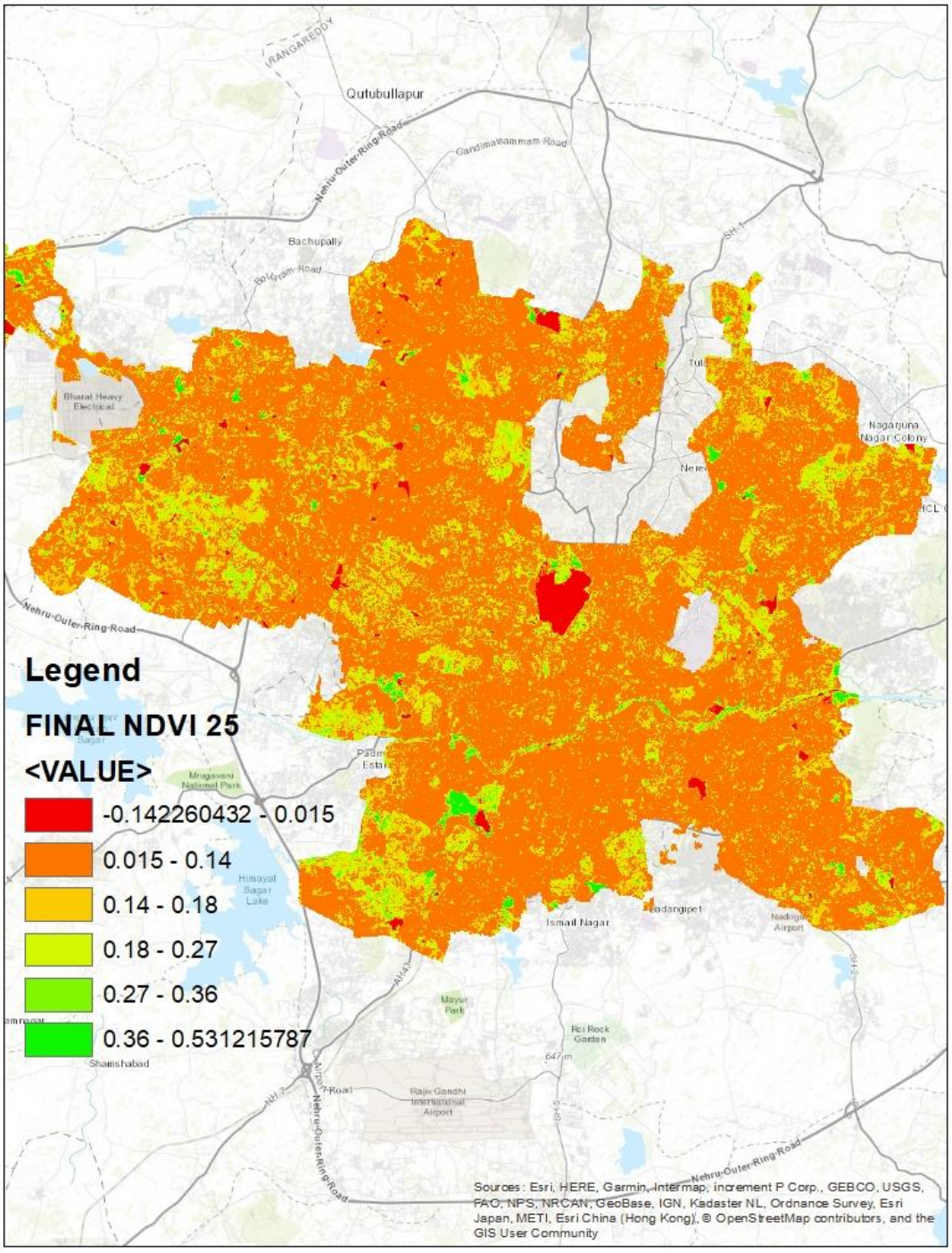


Figure 31 – Hyderabad NDVI map (Source – Author)

Chapter 5 : Proposals and Design Interventions

5.1 Introduction

Chapter 5 represents the culmination of the research findings by transitioning from assessment to **action-oriented strategies**. Building upon the data, field observations, spatial analyses, and stakeholder feedback presented in earlier chapters—especially the walkability audit in Chapter 4—this chapter focuses on **practical, design-based, and policy-level interventions** to enhance tourist walkability in Hyderabad.

The chapter begins by recognizing the **key deficiencies** highlighted in the existing infrastructure: fragmented pedestrian pathways, poor signage, inadequate shade and seating, unsafe crossings, and lack of last-mile connectivity between transit points and tourist landmarks. These gaps undermine the tourism potential of iconic areas like Charminar, Laad Bazaar, Golconda Fort, Hussain Sagar, and Necklace Road.

In response, Chapter 5 presents a **multi-pronged strategy** guided by urban design principles, global best practices, and local needs. Each intervention is mapped not only to the identified problems but also to **specific walkability parameters** such as accessibility, comfort, continuity, safety, and aesthetic experience. Special emphasis is placed on designing for the **"15-minute tourist city" concept**, where major attractions, amenities, and services are within a walkable radius.

Additionally, this chapter presents **phasing strategies and stakeholder-specific recommendations**—for urban local bodies (e.g., GHMC, HMDA), tourism departments, planners, and community groups—to ensure that the proposed interventions are **scalable, maintainable, and context-sensitive**.

In essence, Chapter 5 moves the research from diagnosis to solution, outlining a **clear roadmap for making Hyderabad a walkable and tourist-friendly city** through spatial design, technological integration, and policy innovation.

5.2 Proposals and Design Interventions

This chapter builds upon the assessment to propose concrete design and policy interventions for improving tourist walkability in Hyderabad. It presents a series of actionable strategies, categorized into physical improvements, tactical urbanism, signage and safety enhancements, and phased implementation.

Proposed interventions include:

- Upgrading pedestrian networks with continuous, wide, and shaded pathways.
- Introducing **tactical urbanism** elements such as temporary plazas, painted crossings, and street furniture.
- Enhancing **wayfinding systems** through multilingual signs, digital maps, and smart kiosks.
- Improving **safety and comfort** by adding lighting, surveillance, public amenities, and resting areas.

Pilot interventions are suggested for high-priority zones like Charminar, Laad Bazaar, and Necklace Road. The chapter emphasizes the need for **stakeholder collaboration**, community involvement, and policy support to ensure the long-term success of walkability improvements.

The map presents a proposed plan to enhance tourism connectivity in Hyderabad by integrating the city's metro network with major tourist circuits. Key tourist locations, including temples and heritage sites, are emphasized with red triangular symbols, and are surrounded by concentric buffer

zones of 500, 1000, and 1500 meters to represent accessibility from nearby metro stations. These buffers help assess the ease of pedestrian access to attractions from public transport points. The map also categorizes surrounding land use into residential, commercial, and public/semi-public zones, providing insight into the urban context of each site. The proposed circuit aims to improve mobility for visitors, reduce traffic congestion, and encourage sustainable tourism by leveraging the existing metro infrastructure.

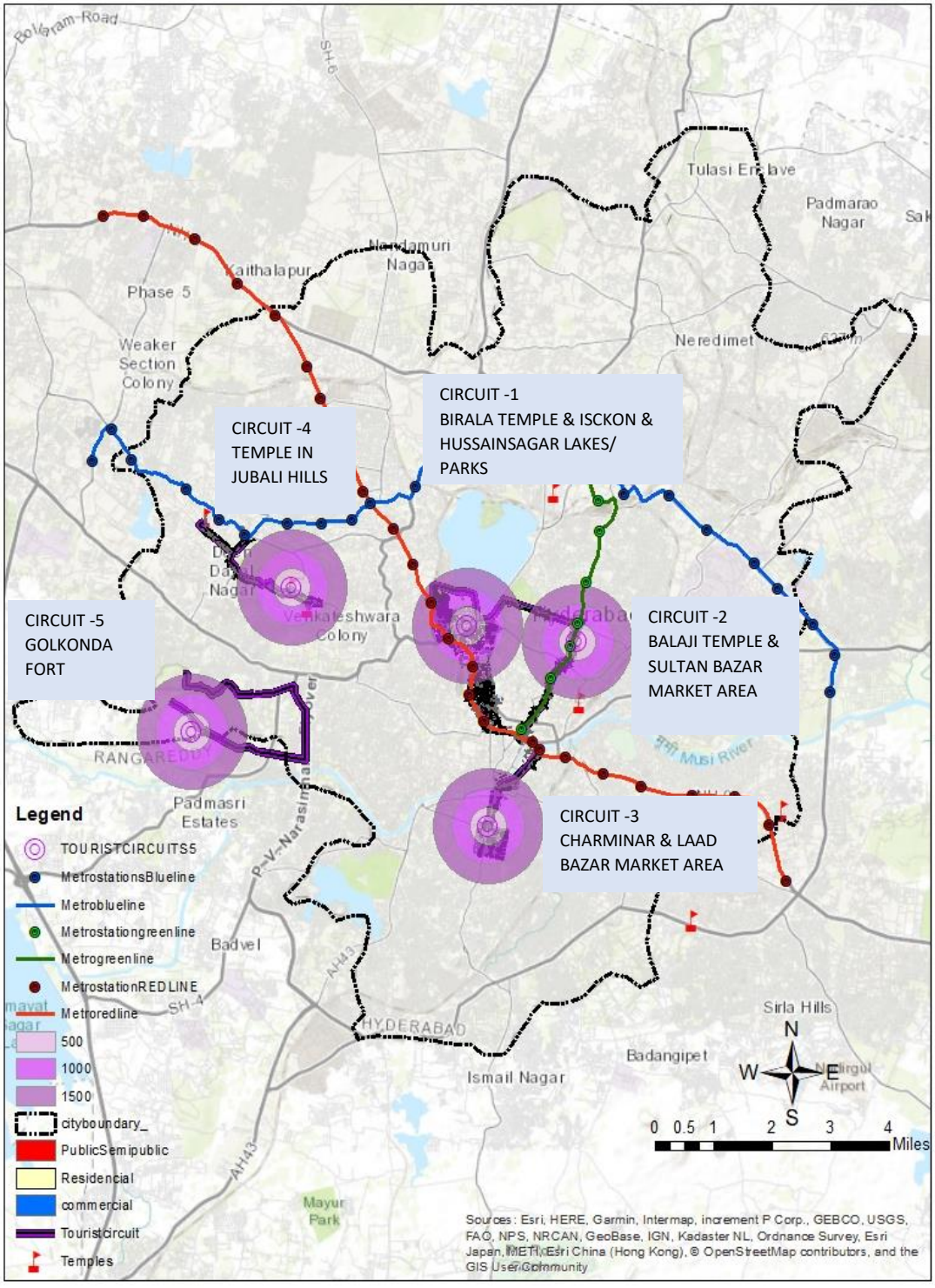


Figure 32 – Hyderabad Tourist network Route (Source – Author)

5.3 Proposal concept

The overarching goal is to **create a walkable, connected, and intelligent urban environment** that is comfortable, accessible, and engaging for tourists. The concept centres on **"integration"** — integrating physical infrastructure, technology, aesthetics, and user experience.

The concept diagram you've provided illustrates a **comprehensive, multi-faceted approach to enhancing tourist walkability in Hyderabad**. Let's break it down in detail by interpreting each visual element and its role in the overall **proposal framework**:

Concept

Tourist Walking Circuit (Heritage Walk) is a pedestrian-friendly route connecting important historical, cultural, Religious or architectural sites within a Hydrabad city to ensure quality infrastructure, tourist services, and long-term sustainability.

1. **Pedestrian Pathways: Wide, paved, shaded walkways with lighting.**
2. **Wayfinding Signage: Informative and directional signs.**
3. **Tourist Kiosks:**
    1. Ticketing and booking.
    2. Guided walk registrations.
    3. Information desks, maps, brochures.
    4. Souvenir shops or local crafts outlets.
4. **Street Furniture:**
    1. Benches, water fountains, public toilets, waste bins.
5. **Smart Features:**
    1. QR codes for audio guides.
    2. Mobile apps for self-guided tours.
6. **Cultural Spaces:**
    1. Small performance areas (folk dances, storytelling).
7. **Security and Safety:**
    1. CCTV surveillance.
    2. Tourist police booths.

5.4 Interventions

5.4.1 Khairtabad metro station – Hussain Sagar Lake -Lakdikapul metro station – Birla Temple

Hussain Sagar Lake is one of Hyderabad's most iconic landmarks, surrounded by cultural and recreational attractions. However, the lakefront remains underutilized in terms of active mobility and public space design. This proposal aims to **develop an integrated riverfront park with a dedicated bicycle track** to enhance the usability, accessibility, and environmental value of the lake.

Total Length of Bicycle Track: ~10 km

To enhance comfort and visual appeal, the walkway will be shaded with rows of native trees and strategically placed pergolas at regular intervals. Street furniture—including benches, litter bins, drinking water fountains, and designated resting zones—will be installed to support long walks and promote user comfort. For nighttime safety, solar-powered pathway lighting and bollards will illuminate the route, while railings along water edges, soft cornering, and CCTV surveillance will further ensure a secure environment.

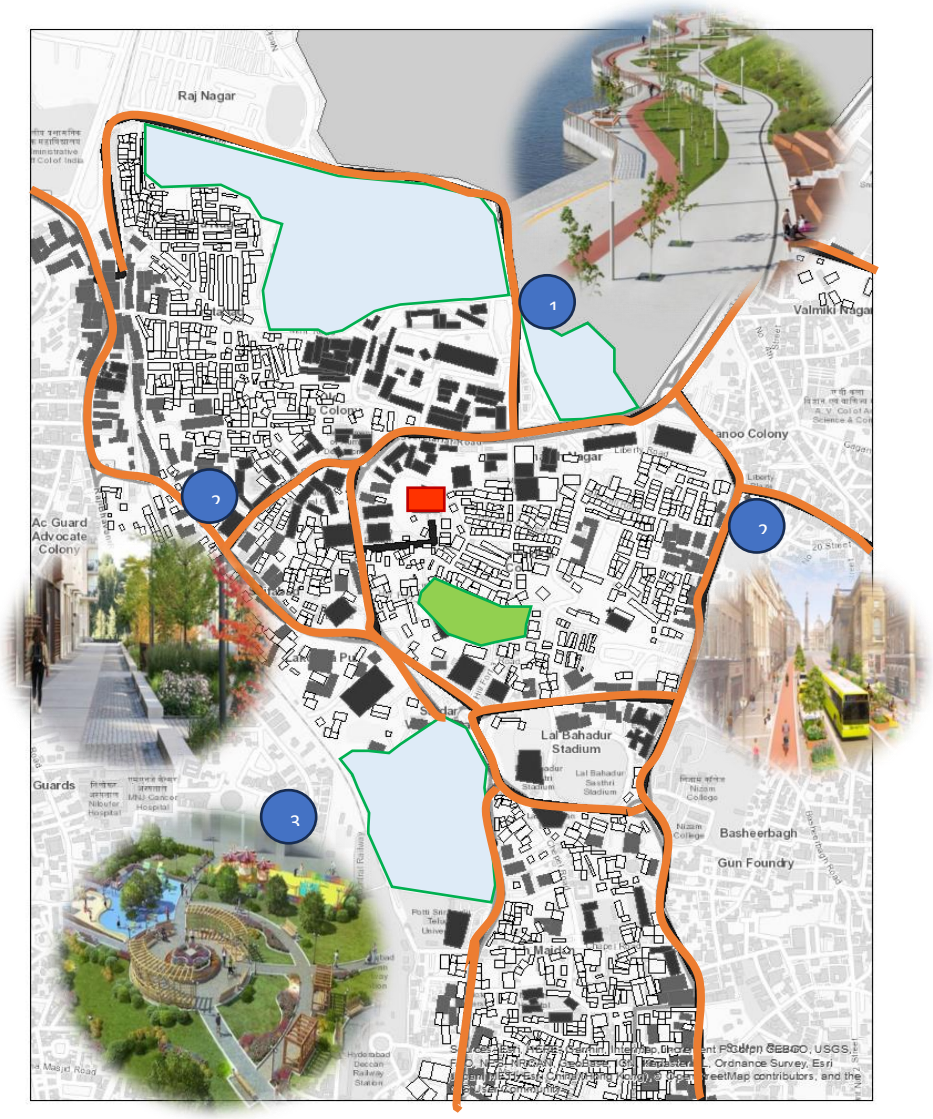


Figure 33 – Hyderabad Intervention -1 (Source – Author

5.4.2–Ghandhi Bhavan Metro Station – Abids Area –Shopping Streets

- **Urban Park (Recreational Zone)** - Urban "pause point" with green lawns, amphitheater, play areas, and water bodies. Transition zone between temple and commercial street. Acts as a community gathering and event space.

- **Shopping Street (Commercial Zone)** - Bustling area with wide pedestrian walkways, shopfronts, and cafes. Designed for street vending, weekend markets, and cultural performances. Transparent facades, arcades, and interactive storefronts.

- **Temple Walk (Spiritual Zone)** - Linear path leading to the temple, lined with banyan/peepal trees. Quiet, contemplative atmosphere with water elements and shaded seating. Traditional street furniture, sacred art, and light incense in the air.

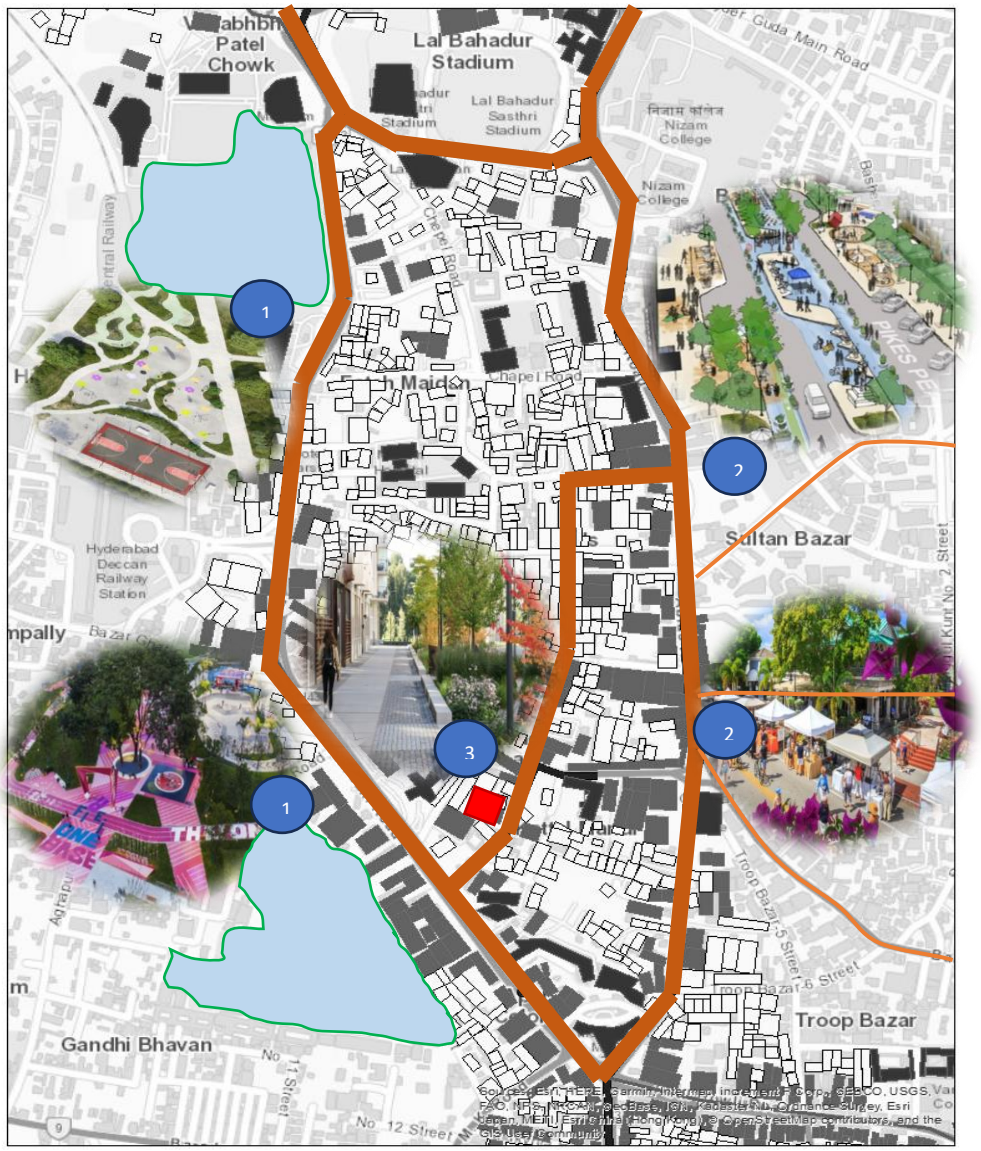


Figure 34 – Hyderabad Intervention -2 (Source – Author)

5.4.3 Intervension 3 –MG Metro Station – Salarjung Museum – Musi River development

- **Shaded shopping streets** in Hyderabad offer pedestrians a more comfortable shopping experience, especially given the city's hot climate. Here are some popular shopping areas in Hyderabad that are known for having shaded streets — either naturally (tree-lined) or artificially (through canopies, arcades, or covered walkways
- **Recreational and Cultural SpacesTourist Attractions**: Plans include the establishment River24×7 street markets, and eco-friendly zones to boost tourism.
- **Infrastructure Development Bridges and Connectivity**: Construction of 17 new bridges to enhance connectivity across the river. **Urban Amenities**: Development of recreational zones, open-air theaters, and cultural plazas to promote community engagement and tourism.
- **Ecological Restoration Sewage Treatment Plants (STPs)**: Construction of STPs to improve water quality and reduce pollution levels in the river. **Flood Management**: Implementation of flood mitigation systems and stormwater management to prevent urban flooding.

Figure 35– Hyderabad Intervention -3 (Source – Author

5.4.4 Intervention 4 –tourist circuits & heritage walks

The **Charminar Heritage Walk** is a cultural and historical walking tour through Hyderabad's old city, centered around the iconic **Charminar** monument. This 1.5–3 hour experience explores key landmarks such as **Mecca Masjid**, **Laad Bazaar**, **Chowmahalla Palace**, **Badshahi Ashurkhana**, and **Jama Masjid**. The walk offers a deep dive into **Qutb Shahi** and **Nizam-era** architecture, traditional markets, and religious heritage. Ideal for tourists, students, and history enthusiasts, the walk reveals the city's rich legacy, blending **Islamic, Persian, and Deccani cultures**. Best experienced in the morning or evening, it combines education with immersive local experiences.

Figure 36 – Hyderabad Intervention -4 (Source – Author)

- **Heritage walk** The Charminar Heritage Walk is an immersive initiative designed to reconnect people with the soul of Hyderabad. It bridges the past with the present, allowing citizens and tourists to rediscover the charm, history, and cultural vibrancy of the Old City in a sustainable and engaging way.

5.5 Conclusion and Recommendations

Enhancing Tourist Walkability in Hyderabad

The comprehensive study on enhancing tourist walkability in Hyderabad concludes that walkability is not merely a transportation or infrastructure concern but a critical component of an engaging, inclusive, and sustainable tourism experience. Hyderabad, with its rich cultural heritage, diverse tourist attractions, and rapidly urbanizing fabric, holds immense potential to offer pedestrian-friendly environments, especially around landmarks like Charminar, Golconda Fort, Laad Bazaar, and Hussain Sagar. However, the current pedestrian infrastructure is fragmented, unsafe, and lacks continuity, resulting in a suboptimal experience for tourists.

Through a multidisciplinary and data-driven methodology involving walkability audits, spatial analysis using GIS and Space Syntax, stakeholder inputs, and international case studies, the report identifies key challenges such as poor footpath design, lack of shade, limited signage, unsafe crossings, and inadequate last-mile connectivity. In response, the proposals laid out in Chapter 5 emphasize the development of connected pedestrian networks, inclusive design, tactical urbanism, smart navigation tools, and integration with public transport systems.

The report advocates for a shift in planning priorities—from vehicle-centric development to human-scale, pedestrian-first urban design—guided by global planning theories like New Urbanism and Jan Gehl's principles. It also calls for the adoption of supportive policies and partnerships across tourism, urban development, and local governance frameworks.

In conclusion, enhancing tourist walkability in Hyderabad is a transformative strategy to boost the city's tourism potential, improve urban liveability, and support broader sustainability goals. By implementing the proposed interventions, Hyderabad can become a model for heritage cities that celebrate their history while ensuring a seamless, safe, and enriching walking experience for all tourists.

5.5.1 Summary of Key Findings

This study was conducted to evaluate and enhance the walkability of Hyderabad's tourist zones. Through spatial analysis, field observations, surveys, and mapping, several significant findings emerged:

1. Tourist Areas Lack Walkable Infrastructure

Key tourist destinations such as Charminar, Laad Bazaar, Golconda Fort, and Hussain Sagar lack continuous and safe pedestrian pathways. Most footpaths are encroached upon by vendors, poorly maintained, or absent altogether. This discourages walking, especially for international tourists unfamiliar with the city's layout.

2. Walkability is Crucial for Enhancing the Tourist Experience

Tourists highly value ease of movement, comfort, and safety. Walkable areas allow them to connect more intimately with the culture, history, and daily life of the city. Surveys revealed that tourists who explored areas on foot had a more immersive and satisfactory experience compared to those reliant on vehicles.

3. Metro Accessibility Exists but Lacks Last-Mile Connectivity

While Hyderabad's metro system is extensive and modern, it often fails to connect directly to major tourist sites. For example, reaching Golconda Fort or Charminar from the nearest metro station still requires navigating poorly connected streets or hiring other transport modes.

4. Pedestrian Safety and Comfort Are Inadequate

Factors like high-speed traffic, lack of shaded walkways, improper signage, inadequate lighting, and the absence of rest zones negatively affect walkability. These infrastructural gaps create an uninviting pedestrian environment, particularly in areas with extreme heat or vehicular dominance.

5. High Potential for Improvements through Tactical Interventions

Analysis using Space Syntax, GIS mapping, and walkability indices showed that relatively simple interventions—like better signage, shaded paths, pedestrian crossings, and footpath repairs—could substantially improve the walking environment in key tourist areas.

6. Policy Support Exists but Implementation Is Weak

While national and state-level policies (Smart City Mission, PRASAD, Swadesh Darshan, etc.) support walkable infrastructure, implementation at the local level remains fragmented. There's a clear gap between policy vision and ground-level execution.

5.5.2 Recommendations for Stakeholders

Enhancing tourist walkability in Hyderabad requires a multi-stakeholder, cross-disciplinary approach. Below are tailored recommendations for various key actors:

A. Urban Planners and Designers

- **Create a "Tourist Walkability Master Plan"** that identifies and connects key heritage sites, markets, public spaces, and metro stations through pedestrian-friendly corridors.
- Use **tactical urbanism** (e.g., pop-up pedestrian plazas, temporary footpaths) in high-tourist traffic areas to test and refine interventions before permanent installation.
- Implement **15-minute tourist zones**, ensuring all major attractions are accessible within a comfortable 15-minute walk.

B. Government and Policymakers

- **Mandate compliance** with IRC pedestrian infrastructure guidelines and MoHUA advisories on footpath width, lighting, and amenities in heritage and tourist areas.
- Develop **multi-agency task forces** involving GHMC, HMDA, Tourism Department, and L&T Metro to coordinate walkability efforts.
- Allocate a portion of **Smart Cities and AMRUT funds** specifically for pedestrian infrastructure and signage in tourist zones.
- Integrate **walkability metrics** into urban development proposals and heritage conservation projects.

C. Tourism Authorities

- Develop and promote **self-guided walking circuits** using mobile applications, digital maps, and QR-coded signboards to help tourists navigate the city on foot.
- Provide **visitor amenities** such as shaded rest zones, hydration kiosks, clean toilets, and multilingual information boards along walkable routes.
- Highlight walkable experiences (heritage trails, food walks, craft corridors) in tourism marketing campaigns, positioning Hyderabad as a pedestrian-friendly city.

D. Local Communities and Businesses

- Encourage **community engagement** in maintaining pedestrian paths, especially in bazaars and markets.
- Incentivize **businesses to create walkable storefronts** with open public seating, attractive facades, and street-level interaction.
- Organize **heritage walk events**, festivals, and open street days to promote foot traffic and showcase local culture.

E. Technology and Data Providers

- Utilize **real-time pedestrian flow data** using sensors or mobile apps to monitor usage and identify pressure points.
- Deploy **interactive kiosks and mobile apps** offering walkability scores, navigation tools, and tourist recommendations.
- Use **Space Syntax and GIS analytics** to continuously map and optimize walkable areas based on tourist behavior and environmental changes.

5.5.3 Future Research Directions

This study provides a strong foundation for improving tourist walkability, but it also opens several opportunities for deeper exploration and broader application:

1. Behavioral Mapping with Technology

Future research can use GPS tracking, wearable sensors, or app-based travel diaries to study tourist movement patterns, route preferences, stopping points, and dwell times. This will offer more granular insights into pedestrian behavior.

2. Longitudinal Studies on Impact

Further research should examine the long-term economic, social, and cultural impact of enhanced walkability—such as increased tourist spending, longer stays, improved health outcomes, or changes in local business performance.

3. Climate-Sensitive Walkability Design

Given Hyderabad's hot climate, there is a need for in-depth research on **thermal comfort** for pedestrians. Studies could explore the role of street orientation, material choices, vegetation cover, and shaded microclimates in improving walkability during summer months.

4. Inclusive Design and Accessibility

Future work should focus on **universal design principles** to ensure that walkable environments cater to all tourists, including the elderly, children, and persons with disabilities. This includes accessible pavements, tactile guides, and inclusive signage.

5. Comparative Studies Across Cities

Conducting **comparative analyses** with other Indian heritage cities (e.g., Jaipur, Varanasi, Kochi) or international cities with successful walkability models can help Hyderabad adopt best practices and avoid common pitfalls.

6. Integration with Non-Motorized Transport (NMT)

Exploring how walkability can be enhanced by integrating it with **micro-mobility options** such as shared bicycles, e-scooters, or cycle rickshaws can support end-to-end tourist mobility.

7. Walkability as a Catalyst for Local Economic Development

Future research can examine how improving walkability influences **street-level commerce**, local employment, and the informal economy (e.g., street vendors, guides, performers).

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